

EXHIBIT 11

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

CISCO SYSTEMS, INC.,)
)
Plaintiff,)
) Case No.
vs.) 5:14-cv-05344-BLF (PSG)
)
ARISTA NETWORKS, INC.,)
)
Defendant.)
_____)

*** HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY ***

VIDEOTAPED DEPOSITION OF RAMANATHAN KAVASSERI
Palo Alto, California
Tuesday, February 23, 2016
Volume I

Reported by:
CARLA SOARES
CSR No. 5908
Job No. 2216982
Pages 1 - 195

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1 UNITED STATES DISTRICT COURT	1 APPEARANCES (Continued):
2 NORTHERN DISTRICT OF CALIFORNIA	2
3 SAN JOSE DIVISION	3 For the Witness:
4	4 FARELLA BRAUN & MARTEL LLP
5 CISCO SYSTEMS, INC.,)	5 BY: RODERICK M. THOMPSON, Attorney at Law
6) Plaintiff,)	6 Russ Building
7) Case No.	7 235 Montgomery Street
8 vs.) 5:14-cv-05344-BLF (PSG)	8 San Francisco, California 94104
9)	9 415.954.4400
10 ARISTA NETWORKS, INC.,)	10 rthompson@fbm.com
11)	11
12 Defendant.)	12
13	13 ALSO PRESENT: Ramon Peraza, Video Operator
14	14
15	15 --o0o--
16	16
17 VIDEOTAPED DEPOSITION OF RAMANATHAN	17
18 KAVASSERI, Volume I, taken on behalf of Defendant,	18
19 at 601 California Avenue, Palo Alto, California,	19
20 beginning at 10:09 a.m., and ending at 4:26 p.m., on	20
21 Tuesday, February 23, 2016, before CARLA SOARES,	21
22 Certified Shorthand Reporter No. 5908.	22
23	23
24	24
25	25
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1 APPEARANCES:	1 INDEX
2	2 WITNESS
3 For the Plaintiff:	3 RAMANATHAN KAVASSERI EXAMINATION
4 QUINN EMANUEL URQUHART & SULLIVAN, LLP	Volume I
5 BY: MARK TUNG, Ph.D., Attorney at Law	4
6 555 Twin Dolphin Drive, 5th Floor	5 BY MR. SANTACANA 10
7 Redwood Shores, California 94065	6 BY MR. TUNG 186
8 650.801.5016	7
9 marktung@quinnemanuel.com	8 EXHIBITS
10	9 NUMBER DESCRIPTION PAGE
11	10 Exhibit 325 Ramanathan R. Kavasseri's 22
12 For the Defendant:	11 Responses and Objections to
13 KEKER & VAN NEST LLP	12 Defendant Arista Networks'
14 BY: EDUARDO E. SANTACANA, Attorney at Law	13 Subpoena to Testify at a
15 BY: RYAN WONG, Attorney at Law	14 Deposition
16 633 Battery Street	15
17 San Francisco, California 94111	16 Exhibit 326 LinkedIn page for Ram 24
18 415.391.5400	17 Kavasseri
19 esantacana@kvn.com	18
20 rwong@kvn.com	19 Exhibit 327 Document headed "A Simple 52
21	20 Network Management Protocol,"
22	21 dated 8/1988,
23	22 Bates ARISTANDCA00022432 - 2464
24	23
25	24 Exhibit 328 Document headed "Event MIB," 83
	25 dated 10/2000
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1	EXHIBITS		1	REFERENCED EXHIBITS	
2	NUMBER	DESCRIPTION	PAGE	(Not attached)	
3	Exhibit 329	Document headed "Commands for	94	Exhibit/Page	
4		which Cisco listed Ramanathan		92 89	
5		Kavasseri as 'Author/Originator'			
6		in Cisco's response to Interrogatory		--o0o--	
7		No. 16, Exhibit F (January 12, 2016)"			
8					
9	Exhibit 330	Document labeled "Ram Kavasseri,	101		
10		Garry Horoupian," dated 2/8/06,			
11		Bates CSI-CLI-00682250 - 2314			
12					
13	Exhibit 331	Document labeled "Parser Police:	122		
14		Where can we go from here?"			
15		Bates CSI-ANI-00031041 - 0032			
16					
17	Exhibit 332	Document headed "Hot ICE Product	129		
18		Requirements Document,"			
19		Bates CSI-CLI-00662062 - 2085			
20					
21	Exhibit 333	Document headed "Unprintable	132		
22		File,"			
23		first page Bates CSI-CLI-00358160			
24					
25					
			Page 6		Page 8
1	EXHIBITS		1	Palo Alto, California	09:21:40
2	NUMBER	DESCRIPTION	PAGE	Tuesday, February 23, 2016	
3	Exhibit 334	Document headed "User-based	149	10:09 a.m.	
4		Security Model (USM) for version 3			
5		of the Simple Network Management		PROCEEDINGS	09:21:40
6		Protocol (SNMPv3)," dated 1/1998		THE VIDEO OPERATOR: Good morning. We are	
7				on the record at 10:09 a.m. on February 23rd, 2016.	
8	Exhibit 335	Document headed "View-based	151	This is the videotaped deposition of Mr. Ramanathan	
9		Access Control Model (VACM) for		Kavasseri.	
10		the Simple Network Management		My name is Ramon Peraza, here with our	10:09:15
11		Protocol (SNMP)," dated 1/1998		court reporter, Carla Soares. We're here from	
12				Veritext Legal Solutions at the request of counsel	
13	Exhibit 336	Document headed "An Architecture	154	for the defendant.	
14		for Describing SNMP Management		This deposition is being held at Wilson	
15		Frameworks," dated 1/1998		Sonsini in Palo Alto. The caption of this case is	10:09:26
16				Cisco Systems, Inc., versus Arista Networks, Inc.,	
17	Exhibit 337	Document headed "Doc Number	159	Case No. 5:14-cv-05344-BLF (PSG).	
18		ENG-28473,"		Please note that audio- and	
19		Bates CSI-CLI-00609071 - 9083		video-recording will take place unless all parties	
20				have agreed to go off the record. Microphones are	10:09:50
21	Exhibit 338	Document entitled "Cisco IOS	172	sensitive and may pick up whispers or private	
22		Network Management Command		conversations.	
23		Reference," dated 10/2009,		At this time, Counsel, please identify	
24		Bates CSI-CLI-00319765 - 1101		yourself for the record and state whom you	
25				represent.	10:10:00
			Page 7		Page 9

1 time you worked at Cisco? 10:59:08	1 standard by the IETF and is developed by multiple 11:02:13
2 A The definition of "team" here is vague.	2 vendors, and everybody implements that. And many
3 Q Okay. And I apologize. I should have	3 management protocols use it as a standard way of
4 asked you that question.	4 querying information from devices that are
5 So you said that when you first joined 10:59:20	5 networked. 11:02:36
6 Cisco, you joined the SNMP team. What did you mean	6 Q Do you know when SNMP was developed as an
7 by that?	7 industry standard protocol?
8 A I joined a team whose primary	8 A That's -- could you rephrase that
9 responsibility was working to develop and maintain	9 question, please?
10 the SNMP protocol. 10:59:34	10 Q Sure. 11:03:37
11 Q Does that team have a name?	11 Was SNMP an industry standard protocol
12 A It's so long ago, I don't remember the	12 when you started working at Cisco?
13 exact name apart from probably it was SNMP.	13 A Yes, it was.
14 Q It probably was not SNMP?	14 Q And do you recall when the IETF made it an
15 A It probably was SNMP for all I know. 10:59:51	15 industry standard protocol? 11:03:59
16 Q It probably was SNMP?	16 A I don't believe that is a true -- I don't
17 A Yeah.	17 believe that's a valid question.
18 Q Did that team have responsibilities other	18 Q Okay. Why is that?
19 than implementing the SNMP protocol?	19 A I don't believe the IETF has any control
20 A Yes. 10:59:59	20 over whether a protocol is industry standard or not. 11:04:15
21 Q What other responsibilities did it have?	21 Q Okay.
22 A Its responsibilities included reviewing	22 A It defines the protocol, and it's industry
23 extensions to the SNMP protocol submitted by other	23 standard only after companies pick it up and support
24 protocol teams within Cisco.	24 it.
25 Q Did the team have any other 11:00:29	25 Q So SNMP was an industry standard protocol 11:04:25
Page 46	Page 48
1 responsibilities other than that? 11:00:30	1 because multiple vendors used it? 11:04:28
2 A The team was encouraged to participate in	2 A Yes, used a compliant version of it.
3 the IETF to define use standards around SNMP and	3 Q Okay. And a compliant version was a
4 network management.	4 version that complied with the definitions IETF
5 Q Any other responsibilities? 11:00:47	5 provided? 11:04:41
6 A Not that I can recollect easily at this	6 A Correct.
7 time.	7 Q And IETF stands, just so we have it on the
8 Q What does SNMP stand for?	8 record, for Internet engineering task force,
9 A I better nail this one, right? Simple	9 correct?
10 network management protocol. 11:01:17	10 A Yes. 11:04:51
11 Q Okay. And is it fair to say that you	11 Q You said that you were encouraged or your
12 first became familiar with the protocol when you	12 team was encouraged to participate in IETF, correct?
13 started working at Cisco?	13 A Correct.
14 A That is correct.	14 Q Was there a particular group at the IETF
15 Q Okay. While you were working at Cisco, 11:01:31	15 that you were encouraged to participate in, or 11:05:49
16 did you become familiar with any other routing	16 subject area?
17 protocols as part of your work?	17 A SNMP.
18 A Not that I recall right away, but I'm	18 Q Yes?
19 pretty sure based on the nature of my work that I	19 A Yes.
20 would have interacted with multiple protocols. The 11:01:52	20 Q SNMP. Anything else? 11:06:09
21 specific ones don't jump to mind.	21 A Not explicitly encouraged, as far as I
22 Q Is SNMP an industry standard protocol?	22 know. Not discouraged, either. So very neutral on
23 A Yes, it is.	23 that.
24 Q How do you know that?	24 Q How was your team encouraged by Cisco to
25 A It is a protocol that was defined as a 11:02:11	25 participate in the IETF? 11:06:36
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1 Q Sure. 11:37:17	1 don't recall the features that I was working on, so 11:40:26
2 The functional specifications that you	2 I don't recall specifically what I would have done
3 reviewed when developing SNMP features, would that	3 to compare.
4 specification have been written by someone at Cisco?	4 Q I see.
5 A Yes. 11:37:27	5 Was it part of your process in developing 11:40:35
6 Q And did you -- were you involved in	6 features to review what other vendors were doing to
7 writing any functional specifications?	7 implement the same features?
8 A Yes, I was.	8 A Other -- so in the space that we worked
9 Q Was that for the features that you were	9 with SNMP, vendors contributed to the IETF document
10 implementing? 11:37:36	10 so it wasn't as necessary to look at their 11:40:59
11 A Yes, it was. Yes, it was.	11 implementations because they were there telling us
12 Q Do you recall right now which functional	12 what they were trying to build. That was the whole
13 specifications you may have written?	13 point of building an industry standard.
14 A Not off the top of my head, no.	14 Also, Cisco was on the leading edge of
15 Q Did the GEM methodology involve reviewing 11:37:57	15 implementing the protocols as they were being 11:41:11
16 IETF documents?	16 developed. In a few cases, we would have the
17 A As far as I recall, no.	17 implementations before the protocols were released
18 Q Did you review IETF documents when you	18 because we were helping author the protocol.
19 were implementing SNMP features?	19 So at that point, looking at other vendors
20 A That is a broad question. If the feature 11:38:12	20 was not possible because they had not done the 11:41:24
21 had anything specific to do with an IETF document,	21 implementations or released the implementations,
22 then yes, I would have had to review the document to	22 which is why I was being very specific in saying, I
23 make sure I was implementing it correctly, "it"	23 don't recall the exact features I was working on.
24 being whatever I was working on.	24 But my answer would change depending on
25 Q Okay. And that is something -- you would 11:38:26	25 what I was working on and depending on whether 11:41:37
Page 62	Page 64
1 I have reviewed an IETF document relating to a feature 11:38:31	1 somebody had done something in the field. 11:41:40
2 you were implementing before you implemented the	2 Q I understand.
3 feature; is that right?	3 Who else worked on the team that was
4 A If there was an IETF document associated	4 implementing SNMP features at Cisco?
5 with what I was working on and I was required to 11:38:41	5 A I don't remember all the names, but my 11:41:58
6 implement part or the whole part of that IETF	6 manager was John Hopprich. My technical lead and
7 document, then yes, I would have reviewed that IETF	7 mentor, Jeff -- Jeffrey Johnson. I had it for a
8 document before I implemented the feature.	8 moment and it went away there. Sandra Durham was
9 Q Were there features that you developed at	9 one of my peers.
10 Cisco relating to SNMP that were not defined by an 11:38:56	10 Anke Dosedal was also one of my team 11:42:34
11 IETF document?	11 members. Robert Stewart, who went by the moniker
12 A I don't have specifics, but I think that's	12 Bob, Bob Stewart, was also one of my peers.
13 a fair generalization, that there are parts of	13 Hold on. There's one more. Scott
14 our -- the Cisco SNMP implementation that were not	14 Mordock, M-O-R-D-O-C-K. Now, I can't recall if
15 described in any part of any IETF document because 11:39:32	15 Scott was on the team when I joined or joined later. 11:43:03
16 it was internal to how our product worked at the	16 He was I think at Cisco when I joined, but I'm not
17 time.	17 sure at what point he was part of the SNMP team or
18 Q So -- okay. When you were developing	18 not. Long time ago.
19 features related to SNMP at Cisco, did you also	19 So those are the names that come to mind.
20 review what other vendors were doing? 11:40:04	20 Q What was John Hopprich's role on the team? 11:43:23
21 MR. TUNG: Objection. Vague.	21 A He was my manager.
22 THE WITNESS: I do not recall.	22 Q And were the rest of the names, apart from
23 BY MR. SANTACANA:	23 John Hopprich and Jeff Johnson, were they also
24 Q You don't recall either way?	24 software engineers?
25 A I would like to change my answer to, I 11:40:23	25 A Yes. 11:43:36
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<p>1 Q If you take a look at the last command in 14:41:36</p> <p>2 this table, "snmp-server user," do you know whether</p> <p>3 you authored that command?</p> <p>4 A Define what you mean by "authored that</p> <p>5 command." 14:41:55</p> <p>6 Q Do you know whether you are the one who</p> <p>7 came up with the sequence of words that resulted in</p> <p>8 this command, "snmp-server user"?</p> <p>9 A I cannot be definitive about it.</p> <p>10 Q Who else do you recall working with on 14:42:07</p> <p>11 this project that resulted in these eight commands?</p> <p>12 A I would probably have reviewed this with</p> <p>13 my team members. And so I can't -- the reason I</p> <p>14 answered the way I did is, I don't know if I came up</p> <p>15 with the word "user" or somebody else came up with 14:42:25</p> <p>16 the word "user." So I'm not sure in hindsight.</p> <p>17 Q Did you come up with the term</p> <p>18 "snmp-server"?</p> <p>19 A Absolutely not.</p> <p>20 Q Okay. How do you know that? 14:42:39</p> <p>21 A It was there before I joined.</p> <p>22 Q It was where?</p> <p>23 A It was in the IOS CLI before I joined</p> <p>24 Cisco.</p> <p>25 Q Okay. And so the addition to that term 14:42:48</p> <p style="text-align: right;">Page 146</p>	<p>1 at 2:44 p.m. 14:44:02</p> <p>2 (Recess, 2:44 p.m. - 3:05 p.m.)</p> <p>3 THE VIDEO OPERATOR: We are back on the</p> <p>4 record at 3:05 p.m.</p> <p>5 BY MR. SANTACANA: 15:05:39</p> <p>6 Q Mr. Kavasseri, we left off talking about</p> <p>7 the "snmp-server user" command, and you testified</p> <p>8 that "snmp-server" came from a prior command in IOS</p> <p>9 at the time?</p> <p>10 A No, I said that I don't know how it came 15:05:56</p> <p>11 about. It was already there when I joined Cisco.</p> <p>12 Q And its inclusion in this command for</p> <p>13 which you are named the author, it's included there</p> <p>14 because it was already part of IOS?</p> <p>15 A It was a root part of the command to which 15:06:12</p> <p>16 I added extensions.</p> <p>17 Q And the root was in IOS before you started</p> <p>18 working at Cisco?</p> <p>19 A To the best of my knowledge, it was</p> <p>20 already there before I started. 15:06:23</p> <p>21 Q And the term "user" is a term that comes</p> <p>22 from the SNMP industry standard?</p> <p>23 A I'm not sure I'd say it exactly that way.</p> <p>24 The term "user" relates to parts of the SNMP V3</p> <p>25 protocol, yes. 15:06:48</p> <p style="text-align: right;">Page 148</p>
<p>1 that was new was the word "user"? 14:42:52</p> <p>2 A Yes</p> <p>3 Q Okay And do you know where that word</p> <p>4 came from?</p> <p>5 A The SNMP V3 protocol specification has a 14:43:00</p> <p>6 definition of roles, if I remember right, and users</p> <p>7 and groups are in the protocol</p> <p>8 Q So the term "user" came from the</p> <p>9 protocol -- came from the industry standard</p> <p>10 protocol? 14:43:21</p> <p>11 A Yes</p> <p>12 MR TUNG: Objection Mischaracterizes</p> <p>13 THE WITNESS: It referred to what was in</p> <p>14 the protocol, yes</p> <p>15 BY MR. SANTACANA: 14:43:29</p> <p>16 Q And the protocol uses the word "user"?</p> <p>17 A I've got to go read the protocol to be</p> <p>18 absolutely sure</p> <p>19 Q Okay</p> <p>20 A After this, can we take a break? 14:43:51</p> <p>21 Q Of course</p> <p>22 If you want, we can take a break right</p> <p>23 now</p> <p>24 A Fantastic</p> <p>25 THE VIDEO OPERATOR: We are off the record 14:44:01</p> <p style="text-align: right;">Page 147</p>	<p>1 Q Is that a term that the protocol uses? 15:06:49</p> <p>2 A I believe so, but I -- if you have a copy</p> <p>3 of the reference, I could take a look.</p> <p>4 Q Sure. Of course.</p> <p>5 THE VIDEO OPERATOR: Exhibit 334. 15:07:03</p> <p>6 (Exhibit 334 was marked for identification</p> <p>7 and is attached hereto.)</p> <p>8 BY MR. SANTACANA:</p> <p>9 Q Exhibit 334 is RFC 2274 titled "User-based</p> <p>10 Security Model (USM) for version 3 of the Simple 15:07:17</p> <p>11 Network Management Protocol (SNMP V3)."</p> <p>12 Do you know, sir, if this is an RFC that</p> <p>13 you reviewed when you were --</p> <p>14 A Yes. Let me -- I'm pretty sure this was</p> <p>15 an RFC I reviewed because I ended up implementing 15:07:39</p> <p>16 parts of it.</p> <p>17 Q And just to be clear, it's an RFC that you</p> <p>18 reviewed when you were implementing the eight</p> <p>19 commands in Exhibit 329?</p> <p>20 A Seven. I'm not sure about "snmp host." 15:07:53</p> <p>21 Q Okay. So this is something you would have</p> <p>22 reviewed before you proposed those command names?</p> <p>23 A Yes, that's correct.</p> <p>24 Q And does this document use the term "user"</p> <p>25 in the same way that the "snmp-server user" command 15:08:13</p> <p style="text-align: right;">Page 149</p>

<p>1 uses it? 15:08:17</p> <p>2 A I would have to read it. Give me a minute</p> <p>3 to --</p> <p>4 Can you rephrase or repeat the question,</p> <p>5 please? 15:09:11</p> <p>6 Q This RFC 2274, does this document use the</p> <p>7 term "user" the same way that you used the term</p> <p>8 "user" in "snmp-server user"?</p> <p>9 A The document does not define a CLI command</p> <p>10 or -- so I will -- the term "user" seems to refer to 15:09:39</p> <p>11 the same entity in both cases. But the document</p> <p>12 does not tell me there needs to be a command called</p> <p>13 "snmp-server user."</p> <p>14 Q I understand.</p> <p>15 A Okay. 15:10:09</p> <p>16 Q So you did not come up with the term</p> <p>17 "user"?</p> <p>18 A In which context?</p> <p>19 Q In the context of this "snmp-server user"</p> <p>20 command. 15:10:32</p> <p>21 A As I responded earlier, I'm not sure how</p> <p>22 the term "user" came about, whether it was due to a</p> <p>23 group interaction or something I did or something</p> <p>24 somebody else did.</p> <p>25 Q Okay. I'd like to direct your attention 15:10:50</p> <p style="text-align: right;">Page 150</p>	<p>1 Q Is this a document you reviewed when you 15:12:26</p> <p>2 were preparing to implement the commands in</p> <p>3 Exhibit 329?</p> <p>4 A I believe it would have been something I</p> <p>5 reviewed before I implemented the commands 15:12:35</p> <p>6 Q And if you flip to page 3 of the document,</p> <p>7 under Section 2.1 titled "Groups," the first</p> <p>8 paragraph defines the term "group" as follows: "A</p> <p>9 group is a set of zero or more securityModel,</p> <p>10 securityName tuples on whose behalf SNMP management 15:12:55</p> <p>11 objects can be accessed. A group defines the access</p> <p>12 rights afforded to all securityNames which belong to</p> <p>13 that group."</p> <p>14 Does this RFC use the term "group" the</p> <p>15 same way that you were using it in your "snmp-server 15:13:08</p> <p>16 group" command?</p> <p>17 A I believe so</p> <p>18 Q What does the "snmp-server group" command</p> <p>19 do?</p> <p>20 A Actually, even reading this document 15:13:26</p> <p>21 probably won't tell me because I need to see all the</p> <p>22 help extensions to see what it does</p> <p>23 Q Okay</p> <p>24 A So it's been a while</p> <p>25 Q You don't recall what it does? 15:13:34</p> <p style="text-align: right;">Page 152</p>
<p>1 now to "snmp-server group," which is the next row 15:10:53</p> <p>2 up.</p> <p>3 A Yeah.</p> <p>4 Q As you've testified, "snmp-server" was a</p> <p>5 term that was a root already present in IOS at this 15:11:03</p> <p>6 time; is that correct?</p> <p>7 A Yes.</p> <p>8 Q The term "group," did that come from IOS</p> <p>9 as well or did it come from somewhere else?</p> <p>10 A I believe there was a concept of "group" 15:11:20</p> <p>11 in this document. Let me look through it one more</p> <p>12 time.</p> <p>13 Q I think you'll have more luck with this</p> <p>14 one.</p> <p>15 A Yeah, there may be a separate document for 15:11:48</p> <p>16 that.</p> <p>17 (Exhibit 335 was marked for identification</p> <p>18 and is attached hereto.)</p> <p>19 BY MR. SANTACANA:</p> <p>20 Q Exhibit 335 is RFC 2275 entitled 15:12:02</p> <p>21 "View-based Access Control Models (VACM) for the</p> <p>22 Simple Network Management Protocol (SNMP)." It's</p> <p>23 dated January 1998.</p> <p>24 Do you recognize this document, sir?</p> <p>25 A Yes, I do. 15:12:25</p> <p style="text-align: right;">Page 151</p>	<p>1 A No. 15:13:35</p> <p>2 Q Okay. Do you recall what "snmp-server</p> <p>3 user" does?</p> <p>4 A I would rather not guess at this point.</p> <p>5 It's been years since I used these commands. 15:13:45</p> <p>6 I probably would be able to figure it out</p> <p>7 within about 25 minutes of touching the CLI, but</p> <p>8 it's really old, old stuff.</p> <p>9 Q I understand.</p> <p>10 I'd like to turn your attention now to the 15:14:14</p> <p>11 two commands right above that, "snmp-server engineID</p> <p>12 local" and "snmp-server engineID remote."</p> <p>13 Did you author those commands?</p> <p>14 A I think I have a strong recollection that</p> <p>15 I had more to do with these commands; in part, the 15:14:32</p> <p>16 fact that there was the ID which is upper case,</p> <p>17 which is usually not what we do in these IOS CLI</p> <p>18 commands. It stands out.</p> <p>19 Q Typically in IOS CLI you weren't</p> <p>20 accustomed to seeing letters capitalized like they 15:14:52</p> <p>21 are in the term "engineID"?</p> <p>22 A Yes.</p> <p>23 Q Why were they capitalized here?</p> <p>24 A I have no idea why I capitalized them.</p> <p>25 Q Okay. 15:15:07</p> <p style="text-align: right;">Page 153</p>

1 (Exhibit 336 was marked for identification 09:11:58	1 the same way as the commands in Exhibit 329? 15:18:29
2 and is attached hereto.)	2 A No, it is not.
3 BY MR. SANTACANA:	3 Q And that's because the E is capitalized?
4 Q I'm handing you what's been marked as	4 A Yes.
5 Exhibit 336, which is RFC 2271, dated January 1998. 15:15:10	5 Q Okay. The capital ID that you find 15:18:38
6 It's titled "An architecture for Describing SNMP	6 memorable in the commands in Exhibit 329 is the same
7 Management Frameworks."	7 capital ID as on this page 36 of --
8 Do you recognize this document?	8 A Correct.
9 A It's been a long time. And while the view	9 Q -- this RFC?
10 and the user bring immediate memories, this is 15:15:42	10 A Correct. 15:18:51
11 probably -- this doesn't bring back immediate	11 Q Does that refresh your recollection as to
12 memories, but I'm sure I read it at some point.	12 why "engineID" is the way it is in Exhibit 329?
13 Q Are you sure you read it --	13 A No.
14 A I soaked in this.	14 Q Okay.
15 Q I'm sorry to interrupt you. 15:15:54	15 A Because if ID capitalized is from here, 15:19:03
16 A Let me -- I assume I read it. I'm not	16 which is I think where you're leading me to, I'm
17 sure. It's been a long time ago.	17 questioning why E is also not capitalized, or S is
18 Q Is this a document you would have reviewed	18 not capitalized.
19 prior to implementing the commands in Exhibit 329?	19 Q The term here has no spaces in it; is that
20 A I would say yes, though there might be 15:16:21	20 right? 15:19:20
21 other commands that match more to the proxy that's	21 A "SnmpEngineID," no, it has no spaces in
22 described in the document.	22 it.
23 Yeah, some of this, yes, I probably would	23 Q And as a software engineer, would it be
24 have read to implement it.	24 fair to say that the reason the E is capitalized
25 Q If you could flip to page -- sorry -- 15:16:35	25 here is because there is no space but it's the 15:19:32
Page 154	Page 156
1 page 36. About a fifth of the way down the page, 15:16:38	1 beginning of a new term? In other words, it's 15:19:36
2 there's two dashes, and it says, "Textual	2 CamelCase?
3 Conventions used in the SNMP Management	3 A It is CamelCase.
4 Architecture."	4 Q But in the Exhibit 329, there's a space,
5 Do you see that? 15:16:55	5 so it's not in CamelCase; is that right? 15:19:45
6 A Yeah.	6 A Yeah. But if it was not -- if we were
7 Q What is your understanding as someone who	7 using CamelCase, why isn't E capitalized is the
8 has participated in the IETF process of the phrase	8 other question, right?
9 "textual conventions used in the SNMP management	9 Q Why isn't the E capitalized?
10 architecture"? 15:17:12	10 A So in Exhibit 329, it's not pure CamelCase 15:19:56
11 A It in this case to me would refer to a	11 because "engineID," the first E is not capitalized.
12 human-readable string representing a particular data	12 Q That's exactly my point. You didn't use
13 type, and semantics around the use of that	13 CamelCase in Exhibit 329, in the commands in
14 particular data type.	14 Exhibit 329.
15 Q So this RFC defines semantically what 15:17:55	15 A In Exhibit 329, I'm not sure how 15:20:15
16 those textual conventions are; is that fair to say?	16 "engineID" came out with a capital ID. It could
17 A It defines textual conventions as they	17 be -- yeah. At this point I'm not sure what the
18 would be used in other MIBs that import from this	18 exact origin is.
19 RFC.	19 Q Okay. In any case, regardless of
20 Q Okay. The first one on this page 36 is 15:18:09	20 capitalization, the term "engineID" is not a term 15:20:37
21 titled, without spaces, "SnmpEngineID."	21 that you came up with, right?
22 Do you see that?	22 A No, it's not a term that I came up with.
23 A S capital, E capital, ID capital. Yes, I	23 Q That's a term --
24 do see it.	24 A Hold on. I can't definitely answer
25 Q So it's -- the "engineID" is capitalized 15:18:26	25 whether the term "engineID" by itself is a term I 15:20:52
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1 came up with for the CLI command or somebody else on 15:20:55	1 A Not at all. I just don't recognize it 15:28:37
2 my team came up with for the CLI command	2 looking at it right now because it's been so long
3 Q The -- I'm sorry I just didn't	3 ago.
4 understand your last answer	4 Q What is this document?
5 Did you coin the term "engineID"? 15:21:46	5 A It's a detailed design document for the 15:29:04
6 A I am not certain that I coined the term	6 SNMP V3 implementation that went into IOS.
7 "engineID"	7 Q And the design document includes -- strike
8 Q Okay The term appears in this document.	8 that.
9 right?	9 Do you know who the author of this --
10 A "SnmpEngineID" appears in this document. 15:22:03	10 sorry. Strike that. 15:29:22
11 yes	11 Do you know who the audience of this
12 Q Okay And you reviewed this document	12 document is?
13 before writing these command names, right?	13 A Other engineers within the team or related
14 A Correct	14 teams who have a need to know about how SNMP was
15 Q The last word in those two commands, the 15:22:19	15 designed so they can maintain it. 15:29:37
16 first one, the last word is "local," and the second	16 Q And so is it fair to say the document
17 one, the last word is "remote"	17 includes information about how you intended to
18 Do you know where those terms come from?	18 implement SNMP V3 including some of the commands
19 A It's been a long time Am I allowed to	19 that you were proposing?
20 look through the document to see if there's anything 15:22:35	20 A Yeah. 15:29:55
21 with "local" and "remote" here?	21 Q Take a look at Section 1.4 on the first
22 Q Sure	22 page. It begins, "Must allow creation and deletion
23 A So the remote engineID, I'm trying to look	23 of SNMP communities, users and groups via both the
24 where in the protocol we talk about SNMP in PROMs	24 CLI and SNMP sets."
25 because I suspect it has to do with message exchange 15:25:39	25 When you wrote "Must allow creation and 15:30:11
Page 158	Page 160
1 between two configured SNMP devices where one is 15:25:42	1 deletion of SNMP communities, users and groups," 15:30:13
2 notifying the other of activity.	2 what is it that has that requirement?
3 Q That would be remote?	3 A Can you repeat the question, please?
4 A One would be local, one would be remote.	4 Q What is it that you were referring to that
5 Q And is that a feature that's provided for 15:26:04	5 requires the -- strike that. 15:30:30
6 in the industry standards?	6 You wrote that something must allow the
7 A I believe so. I'm not sure they use	7 creation and deletion of SNMP communities, users and
8 remote or message authoritative. Without being able	8 groups.
9 to grab through -- to search through the document,	9 What is the "something"?
10 it's hard for me to tell you exactly where -- or 15:26:18	10 A We were striving for feature parity in 15:30:43
11 what could have triggered the use of the term	11 configuring SNMP through both the CLI and through
12 "remote."	12 SNMP.
13 (Exhibit 337 was marked for identification	13 With SNMP V3, if I recall right, if I
14 and is attached hereto.)	14 recall correctly, one of the nice features was that
15 MR. SANTACANA: Exhibit 337 bears the 15:27:40	15 it allowed for SNMP MIBs that could be used to 15:31:04
16 control numbers CSI-CLI-00609071. It's titled	16 configure SNMP.
17 "Document Number ENG-28473, Revision B." It lists	17 So if you did a basic amount of
18 the witness as the author; project manager, Dale	18 configuration of the CLI, the rest of the
19 Francisco; project headline, SNMP V3 Design	19 configuration you could take care of --
20 Document. 15:28:05	20 MR. THOMPSON: Mr. Kavasseri, slow -- 15:31:18
21 Q Mr. Kavasseri, do you recognize this	21 THE WITNESS: Slow it down? Yeah.
22 document?	22 MR. THOMPSON: Thank you.
23 A No, it's been so long ago.	23 THE WITNESS: If you -- what SNMP V3 gave
24 Q Okay. Do you have any reason to doubt	24 us was the ability to do a seed simple configuration
25 that you're the author of this document? 15:28:35	25 through the command line interface, and then do the 15:31:29
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1 rest of the configuration through SNMP directly 15:31:32	1 team suggested, "Hey, go with the shortest string." 15:34:39
2 This was not possible before	2 Because when you're talking about the
3 Because it was not possible before, we had	3 command line, it's all about how many characters you
4 never bothered with creating communities which	4 type, or it's a lot to do with how many characters
5 existed before SNMP V3 through SNMP So now we 15:31:46	5 you type. 15:34:51
6 needed to add that as a support feature as well	6 Q Why is that?
7 BY MR SANTACANA:	7 A Well, you could type U and hit "tab," and
8 Q And the reason you needed to add the	8 if there was no other word that started with U, IOS
9 ability to create and delete communities, users and	9 would auto-complete to "user." So you didn't need
10 groups was because of the features of the industry 15:31:59	10 to type the whole thing. 15:35:03
11 standard SNMP V3?	11 Q Okay. If you turn to the page that ends
12 A I don't know whether SNMP V3 -- the	12 in 82, this is the end of a list of CLI commands
13 SNMP V3 talked about users, not communities, if I	13 that you're proposing, and this one in particular is
14 remember right I think that's what we referred to	14 the "snmp-server engineID" command.
15 in the -- in getting -- things getting tricky 15:32:24	15 Do you see that? 15:35:28
16 Even now we just had it through SNMP, so	16 A Can you repeat that again, please?
17 only the IOS CLI was the point of record I'm not	17 Just -- I'm slowing down reading stuff already.
18 sure whether I meant here that you could delete	18 Q Of course. After the first paragraph
19 stuff through SNMP that was created through the CLI	19 here, which carries over from the previous page,
20 and now the CLI needs to be regenerated or resaved 15:32:38	20 there's an asterisk, and then there's the 15:35:40
21 to NV RAM	21 "snmp-server engineID" command.
22 Q Okay I think I understand And it might	22 A Yeah.
23 be clear if you flip to the page that ends in 75,	23 Q And then below that you describe what the
24 Section 2 7	24 command is and what it's going to do.
25 Section 2 7 says, "SNMP V1/V2 versus SNMP 15:33:02	25 Do you see that? 15:35:49
Page 162	Page 164
1 V3 -- differences, and how things work." 15:33:07	1 A Yeah. 15:35:51
2 And then you have a list of differences	2 Q And then also it shows that local and
3 and how things work between the old and the new	3 remote are optional arguments.
4 versions of SNMP.	4 Do you see that?
5 The first thing that you wrote was, "In 15:33:18	5 A Where does it say local and remote are 15:36:03
6 SNMP V3, 'community strings' are called 'users,'"	6 optional arguments?
7 and "users" is in quotation marks. "Each 'user,'"	7 Q Directly under "snmp-server engineID," do
8 in quotation marks again, "has an access-policy,	8 you see the open bracket, and then it says, "local,"
9 which is termed a 'group,'" and the word "group" is	9 and then there's a vertical line, and then it says,
10 also in quotation marks, "i.e., users belong to a 15:33:31	10 "remote"? 15:36:13
11 group."	11 A So --
12 A Yep.	12 Q So it indicates that the command
13 Q Does this -- strike that.	13 "snmp-server engineID" could either take the local
14 Does this refresh your recollection as to	14 argument or the -- parameter, if you will, or the
15 whether the terms "users" and "group" came from the 15:33:49	15 remote. 15:36:27
16 SNMP standard?	16 A No, I don't think that this is an optional
17 A The term "user" and "group" referred to	17 argument. I think there's a typo in this text here.
18 concepts in the SNMP standard. Of that, I have no	18 Q Okay.
19 issue with saying that.	19 A Because if you look at it, the first
20 The reason I hesitate is, we use the term 15:34:19	20 bracket is an open curly brace. There is no close 15:36:34
21 "user," and we could have used VACM user or any	21 curly brace.
22 other combination of "user."	22 I assume that -- and again, I could be
23 We settled on "user." I'm not sure that	23 completely wrong on this. I assume that the -- if
24 that was because it was directly due to looking at	24 you look at "remote ipaddress udp-port," and then
25 the RFC, or somebody in parser police or within my 15:34:35	25 within angle brackets, "port," following that are 15:36:52
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<p>1 two square brackets. I think the second of those is 15:36:55</p> <p>2 supposed to be a curly bracket.</p> <p>3 The reason I say that is just from parser</p> <p>4 theory, if you have both optional, I'm not sure how</p> <p>5 a programmatic parser would know what you meant. 15:37:08</p> <p>6 Q I see.</p> <p>7 A There are two optional paths to go by and</p> <p>8 a required path at the end.</p> <p>9 Q I see. And I think I -- I didn't mean to</p> <p>10 say "optional." What I meant was that the user has 15:37:23</p> <p>11 an option between using local and using remote.</p> <p>12 A Yeah, that is correct. That seems about</p> <p>13 right.</p> <p>14 Q Okay. But the command itself is</p> <p>15 "snmp-server engineID"; is that fair to say? 15:37:33</p> <p>16 A The root of the command is "snmp-server</p> <p>17 engineID." I agree.</p> <p>18 Q The first thing that you write here under</p> <p>19 that command is, "For SNMP V3 authentication and</p> <p>20 privacy to work, each SNMP agent needs to have its 15:37:46</p> <p>21 own SNMP engine ID."</p> <p>22 A Yes.</p> <p>23 Q Do you see that?</p> <p>24 What did you mean by that?</p> <p>25 A My recollection is hazy, but my hazy 15:38:03</p> <p style="text-align: right;">Page 166</p>	<p>1 Did you author these commands? 15:39:30</p> <p>2 A I think it's just a safe assumption that I</p> <p>3 authored the engineID command.</p> <p>4 Again, I'm going by the fact that it's</p> <p>5 semi CamelCase and it looks odd, and I'm not sure 15:39:43</p> <p>6 anybody else in my team would have come up with</p> <p>7 that.</p> <p>8 The rest of the commands -- they may all</p> <p>9 have been group efforts, team efforts. But I -- I'm</p> <p>10 pretty sure I checked in the files of these 15:39:58</p> <p>11 commands.</p> <p>12 Q Okay. Mr. Kavasseri, you've said a couple</p> <p>13 times that it may be that you were listed here as</p> <p>14 the author of the command because you were the</p> <p>15 person who checked in the files. 15:40:35</p> <p>16 What do you mean when you say that?</p> <p>17 A Every Cisco command -- every IOS CLI</p> <p>18 command is implemented in a source code file. When</p> <p>19 somebody finished developing that, they checked the</p> <p>20 command in. 15:41:02</p> <p>21 So in this case, if you're referring to --</p> <p>22 by "author," if you mean the person who checked in</p> <p>23 the files, then yes, these files were all checked in</p> <p>24 by me originally. But that does not mean that I was</p> <p>25 the sole creator of these keywords. 15:41:15</p> <p style="text-align: right;">Page 168</p>
<p>1 recollection tells me that this is the key that is 15:38:05</p> <p>2 used to encrypt packets going back and forth; i.e.,</p> <p>3 if you change this key, you may not -- yeah. I</p> <p>4 don't change the key. I have no idea what happens</p> <p>5 when you change the key anymore. 15:38:21</p> <p>6 Q Okay. You can set that aside.</p> <p>7 You've mentioned a couple of times that</p> <p>8 some commands can take the word "no" in front of</p> <p>9 them.</p> <p>10 A Yes. 15:38:41</p> <p>11 Q Is that -- you'll see that's not listed in</p> <p>12 Exhibit 329. Cisco doesn't list it that way. "No"</p> <p>13 is an optional thing that you can write in front of</p> <p>14 the command, right?</p> <p>15 A "No" is an optional extension to add in 15:38:51</p> <p>16 front of the command.</p> <p>17 Q And was that already the way the IOS CLI</p> <p>18 worked before you started working at Cisco?</p> <p>19 A By my recollection, yes.</p> <p>20 Q I'd like to turn your attention now to the 15:39:12</p> <p>21 top four commands in this list, which all begin with</p> <p>22 the word "show."</p> <p>23 A Yes.</p> <p>24 Q The words "show snmp," and then there's</p> <p>25 another word. 15:39:22</p> <p style="text-align: right;">Page 167</p>	<p>1 We have a very collaborative work 15:41:20</p> <p>2 environment when I was there, and I -- especially</p> <p>3 with an important feature like SNMP V3, I would</p> <p>4 think that this was a team effort</p> <p>5 Q I just need to go back a second. Could 15:41:36</p> <p>6 you grab Exhibit 336, which is RFC 2271?</p> <p>7 A Yeah</p> <p>8 Q Could you turn to page 45 of that exhibit?</p> <p>9 A Yep</p> <p>10 Q This is an acknowledgment section which 15:41:52</p> <p>11 acknowledges the efforts of the SNMP V3 working</p> <p>12 group at IETF, and it lists as working group members</p> <p>13 a number of people who work at a variety of</p> <p>14 different companies</p> <p>15 A Yes 15:42:04</p> <p>16 Q Some of those people are Keith McCloghrie,</p> <p>17 and in parentheses it says, "Cisco Systems"; Bob</p> <p>18 Stewart, and in parentheses, "Cisco Systems"; and</p> <p>19 Jeff Johnson in the next section, which is a list of</p> <p>20 members of an advisory team at the IETF, also at 15:42:19</p> <p>21 Cisco Systems</p> <p>22 Did you know all of these people?</p> <p>23 A Yes, I did</p> <p>24 Q Do you recall Mr. McCloghrie, Mr. Stewart</p> <p>25 and Mr. Johnson contributing to the SNMP V3 industry 15:42:35</p> <p style="text-align: right;">Page 169</p>

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<p>1 standard protocol while you were working at Cisco? 15:42:40</p> <p>2 A I was not in the room for discussions</p> <p>3 to -- let me rephrase by saying I had very limited</p> <p>4 interactions at the time this document was written.</p> <p>5 I know that Jeffrey Johnson was very 15:43:08</p> <p>6 involved because he was my mentor, and he would tell</p> <p>7 me that he was working on the RFC draft. I have no</p> <p>8 direct evidence of the other two that I can recall.</p> <p>9 I will add an addendum that they both were</p> <p>10 very respected people, and I'm very sure they did a 15:43:32</p> <p>11 lot for these documents. I just don't have any</p> <p>12 direct evidence that I was privy to from a working</p> <p>13 meeting or anything else.</p> <p>14 Q Okay. So you can set that aside now.</p> <p>15 Looking back at Exhibit 329, we'd started 15:43:57</p> <p>16 discussing the four "show" commands, "show snmp"</p> <p>17 commands.</p> <p>18 "Show" was a term that was already in</p> <p>19 IOS CLI; is that fair to say?</p> <p>20 A When I joined Cisco -- I've actually never 15:44:11</p> <p>21 asked the question when "show" was in the command.</p> <p>22 As far as I can tell, it was there when I joined.</p> <p>23 Q And the reason that you used it here was</p> <p>24 because it was already used in other IOS CLI</p> <p>25 commands? 15:44:37</p> <p style="text-align: right;">Page 170</p>	<p>1 Q I understand. 15:45:53</p> <p>2 You've expressed some additional haziness</p> <p>3 about the command "show snmp host."</p> <p>4 A Yes.</p> <p>5 Q I'm going to apologize in advance for the 15:46:21</p> <p>6 heft of this thing.</p> <p>7 A Holy cow.</p> <p>8 (Exhibit 338 was marked for identification</p> <p>9 and is attached hereto.)</p> <p>10 BY MR. SANTACANA: 15:46:31</p> <p>11 Q Exhibit 338 is titled "Cisco IOS Network</p> <p>12 Management Command Reference." It bears control</p> <p>13 numbers beginning with CSI-CLI-00319765, and it's</p> <p>14 dated October 2009.</p> <p>15 I just want you to flip to the page that 15:47:03</p> <p>16 ends in 1060. The internal page would be NM-1248.</p> <p>17 So this page relates to the command</p> <p>18 "snmp-server host."</p> <p>19 A Yes.</p> <p>20 Q Do you recognize that command? 15:47:58</p> <p>21 A Yes, now I do.</p> <p>22 Q Did you author that command?</p> <p>23 A I will go back to my earlier statement</p> <p>24 that it's highly likely that I checked in the file</p> <p>25 with this comand. Especially with this command, I 15:48:21</p> <p style="text-align: right;">Page 172</p>
<p>1 A By the time I implemented these commands, 15:44:38</p> <p>2 "show" was the standard way to display information</p> <p>3 from the CLI.</p> <p>4 Q And the term "SNMP," of course, as we've</p> <p>5 discussed, is an industry standard protocol; is that 15:44:49</p> <p>6 fair to say?</p> <p>7 A In which context? The term "SNMP" by</p> <p>8 itself as an acronym is industry standard protocol,</p> <p>9 yes.</p> <p>10 Q And then so the first two words in each of 15:45:07</p> <p>11 these commands is "show snmp." And then we have</p> <p>12 "show snmp user" and "show snmp group."</p> <p>13 A Yeah.</p> <p>14 Q And the terms "user" and "group" also are</p> <p>15 terms that are used in the IETF SNMP documents; is 15:45:21</p> <p>16 that fair to say?</p> <p>17 A "User" and "group" appear in the -- "snmp</p> <p>18 user" and "group" appear in the IETF documents.</p> <p>19 Q And the way that they're used here is the</p> <p>20 same way that they're used in those IETF documents? 15:45:35</p> <p>21 A To the best of my knowledge, they refer to</p> <p>22 the same things. But they're not used in the same</p> <p>23 way in that the IETF document does not refer to a</p> <p>24 CLI command. In here they're used specifically for</p> <p>25 CLI commands. 15:45:52</p> <p style="text-align: right;">Page 171</p>	<p>1 am not sure whether I was the original author of the 15:48:24</p> <p>2 term "host."</p> <p>3 I'm going to say "term" instead of</p> <p>4 "command," which you used, because we're talking</p> <p>5 about an extension to the SNMP server command here. 15:48:32</p> <p>6 The reason I say "host" is, if I remember</p> <p>7 right, the previous version, now that I'm reading</p> <p>8 this, we are specifying the target of an event that</p> <p>9 is being messaged through SNMP.</p> <p>10 Previously this event was called a trap. 15:48:58</p> <p>11 Now we're giving you the option of a trap or an</p> <p>12 inform.</p> <p>13 So there was some effort to differentiate</p> <p>14 between what was before and what is now the</p> <p>15 acceptable -- accepted way of configuring targets. 15:49:20</p> <p>16 Q If you look at the page NM-1251, control</p> <p>17 number ends in 1063, this is a command history for</p> <p>18 the command "snmp-server host," and it lists as the</p> <p>19 first release IOS version 10.</p> <p>20 Do you see that? 15:50:04</p> <p>21 A "Host"? I thought that that previous</p> <p>22 version was "enable trap." Let me double-check.</p> <p>23 Yeah, this differs from my recollection.</p> <p>24 Q Sorry?</p> <p>25 A This differs from my recollection. 15:50:29</p> <p style="text-align: right;">Page 173</p>

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1 dictate whether the SNMP is an industry standard or 16:21:36	1 Cisco's CLI command expressions appear in any of 16:25:03
2 not?	2 Cisco's competitors' CLI?
3 MR. SANTACANA: Same objections.	3 A Setting aside work product done for other
4 THE WITNESS: I could only offer an	4 attorneys, I am -- I cannot recall if I ever
5 opinion on this. And if you would like my opinion, 16:21:45	5 investigated whether Cisco's CLI expressions 16:25:20
6 if enough vendors do not implement a particular	6 appeared in any other competitor's product.
7 proposal, I do not believe that proposal should be	7 Q Okay.
8 called a standard.	8 A I would also like to make sure I protect
9 If you can hold for a second, I need to	9 myself -- I want to protect myself from perjury
10 turn the phone off now. Sorry. I turned it on, 16:22:05	10 myself here. By saying I cannot recall that does 16:25:41
11 checking. Sorry. Thank you.	11 not mean that it did not happen. My memory doesn't
12 BY MR. TUNG:	12 bring it up right now.
13 Q Okay. Can we turn to Exhibit 329?	13 MR. THOMPSON: Don't be concerned. If you
14 A I'm going to have nightmares about this.	14 don't recall something, that's perfectly fine to say
15 Q Have you ever done an investigation 16:22:44	15 that. 16:25:51
16 whether the specific command expressions that appear	16 THE WITNESS: Okay. All right.
17 in Exhibit 329 are used in this exact form in other	17 BY MR. TUNG:
18 competitors' CLI?	18 Q And I think that's really the intent of my
19 A Can you repeat that question?	19 question, if you recall any instance in which you
20 Q Yeah. 16:23:04	20 have investigated whether a Cisco's competitor's CLI 16:25:57
21 Have you ever done an investigation	21 was identical to Cisco's CLI.
22 whether these specific command expressions that	22 A I have not to the best of my recollection
23 appear in Exhibit 329 appear in Cisco's competitors'	23 at the moment. Nothing comes to mind.
24 CLI?	24 MR. TUNG: I have no further questions.
25 A I believe I may have gone looking for 16:23:20	25 MR. SANTACANA: I don't have any. 16:26:16
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1 these in at least one competitor's CLI. 16:23:21	1 THE VIDEO OPERATOR: This is the end of 16:26:19
2 Q And did you determine whether any of these	2 today's deposition of Mr. Ramanathan Kavasseri. We
3 command expressions appeared exactly the same way in	3 are off the record at 4:26 p.m. The total number of
4 the competitor's CLI?	4 media used was two and it will be retained by
5 A I would prefer to not answer that question 16:23:52	5 Veritext. Thank you. 16:26:28
6 because it might impact work product.	6 (TIME NOTED: 4:26 p.m.)
7 Q Okay. So let me rephrase the question.	7 --o0o--
8 So setting aside any work done at the	8
9 direction of attorneys, have you investigated	9
10 whether any command expressions that appear in 16:24:10	10
11 Exhibit 329 appear identically in a Cisco	11
12 competitor's CLI?	12
13 A To the best of my recollection, I have not	13
14 investigated this in any other vendors' products.	14
15 Q Now expanding the question a little 16:24:31	15
16 broader, have you investigated whether any of	16
17 Cisco's CLI command expressions appear in any Cisco	17
18 competitors' CLI, again, setting aside any work done	18
19 at the direction of attorneys?	19
20 A I want to clarify with my previous answer 16:24:49	20
21 that's setting aside any work product.	21
22 Can you repeat the second question again?	22
23 Q The second question, I'm going to say,	23
24 setting aside any work product, any work done for	24
25 attorneys, have you investigated whether any of 16:24:59	25
Page 191	Page 193

<p>1 2 3 4 5 6 7 8 I, RAMANATHAN KAVASSERI, do hereby declare 9 under penalty of perjury that I have read the 10 foregoing transcript; that I have made any 11 corrections as appear noted, in ink, initialed by 12 me, or attached hereto; that my testimony as 13 contained herein, as corrected, is true and correct. 14 EXECUTED this _____ day of _____, 15 2016, at _____, 16 (City) (State) 17 18 19 _____ 20 RAMANATHAN KAVASSERI 21 22 23 24 25</p> <p style="text-align: right;">Page 194</p>	
<p>1 I, the undersigned, a Certified Shorthand 2 Reporter of the State of California, do hereby 3 certify: 4 That the foregoing proceedings were taken 5 before me at the time and place herein set forth; 6 that any witnesses in the foregoing proceedings, 7 prior to testifying, were administered an oath; that 8 a record of the proceedings was made by me using 9 machine shorthand which was thereafter transcribed 10 under my direction; that the foregoing transcript is 11 a true record of the testimony given. 12 Further, that if the foregoing pertains to 13 the original transcript of a deposition in a Federal 14 Case, before completion of the proceedings, review 15 of the transcript [X] was [] was not requested. 16 I further certify I am neither financially 17 interested in the action nor a relative or employee 18 of any attorney or any party to this action. 19 IN WITNESS WHEREOF, I have this date 20 subscribed my name. 21 22 Dated: 3/7/16 23 24 <u>Carla Soares</u> 25 CARLA SOARES CSR No. 5908</p> <p style="text-align: right;">Page 195</p>	

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

CISCO SYSTEMS,)
INC.,)
Plaintiff,)
vs.) No. 5:14-cv-05344-BLF (PSG)
ARISTA NETWORKS,)
INC.,)
Defendant.)

CONFIDENTIAL INFORMATION UNDER THE PROTECTIVE ORDER

VIDEOTAPED DEPOSITION OF ANTHONY J. LI

Palo Alto, CA

Monday, February 1, 2016

Volume I

Reported by: SUSAN F. MAGEE, RPR, CCRR, CLR

CSR No. 11661

JOB No. 2224600

PAGES 1-258

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7 Plaintiff,)	7 BY MR WONG 9
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17 taken on behalf of Defendant at WILSON, SONSINI,	17
18 GOODRICH & ROSATI, 601 South California Avenue,	18
19 Palo Alto, CA 94304, beginning at 9:13 a.m. and	19
20 ending at 4:17 p.m. on Monday, February 1, 2016,	20
21 before Susan F. Magee, RPR, CCRR, CLR, Certified	21
22 Shorthand Reporter No. 11661	22
23	23
24	24
25	25
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1 APPEARANCES:	1 EXHIBITS
2	2 NUMBER DESCRIPTION PAGE
3 For the Plaintiff:	3
4 QUINN, EMANUEL, URQUHART & SULLIVAN	4 Exhibit 136 LinkedIn Profile (8 pages) 12
5 BY: SEAN PAK, ESQ.	5 Exhibit 137 RFC Table (3 pages) 90
6 50 California Street	6 Exhibit 138 March 1995 RFC 1771, A Border 100
7 22nd Floor	7 Gateway Protocol 4 (BGP-4) (57
8 San Francisco, CA 94111	8 pages)
9 (415) 875-6600	9 Exhibit 139 December 1995 RFC 1887, An 105
10 seanpak@quinnemanuel.com	10 Architecture for IPv6 Unicast
11	11 Address Allocation,
12 For the Defendant:	12 ARISTANDCA00025747-ARISTANDCA
13 KEKER & VAN NEST LLP	13 00025772
14 BY: RYAN WONG, ESQ.	14 Exhibit 140 June 1996 RFC 1966, BGP Route 111
15 BRIAN L. FERRALL, ESQ.	15 Reflection, An Alternative to
16 633 Battery Street	16 Full Mesh IBGP,
17 San Francisco, CA 94111-1809	17 ARISTANDCA00025927-ARISTANDCA
18 (415) 773-6682	18 00025933
19 rwong@kvn.com	19 Exhibit 141 October 2008 RFC 2966, 116
20 bferrall@kvn.com	20 Domain-Wide Prefix Distribution
21	21 with Two-Level IS-IS (16 pages)
22 The Videographer:	22 Exhibit 142 August 1996 RFC 1997, BGP 119
23 JEFREE ANDERSON	23 Communities Attribute,
24	24 ARISTANDCA00026094-ARISTANDCA
25	25 00026098
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1	E X H I B I T S (continued)		1	Palo Alto, CA, Monday February 1, 2016	
2	NUMBER DESCRIPTION PAGE		2	9:13 a.m.	
3			3		
4	Exhibit 143 March 1998 RFC 2281, Cisco Hot 124		4	THE VIDEOGRAPHER: Good morning. We're on	
5	Standby Router Protocol (HSRP),		5	the record at 9:13 a.m. on February 1st, 2016. This 09:13:47	
6	ARISTANDCA00026832-ARISTANDCA		6	is the video recorded deposition of -- so sorry. Of	
7	00026848		7	Anthony Li here with our court reporter Susan Magee.	
8	Exhibit 144 E-mail String Containing 143		8	My name is Jefree Anderson. We are here	
9	9/22/92 E-mail from/to Toni Li,		9	from Veritext Legal Solutions at the request of	
10	TS-00000066		10	counsel for the -- defendant or the plaintiff? 09:14:16	
11	Exhibit 145 Procket Networks PRO/8000 163		11	MR. WONG: Defendants.	
12	Series Software Introduction		12	THE VIDEOGRAPHER: For the defendant. This	
13	(144 pages)		13	deposition is being held at Wilson Sonsini at	
14	Exhibit 146 Procket Networks PRO/8000 164		14	601 California Avenue, Palo Alto, California. The	
15	Series IPv6 Routing Protocols		15	caption of this case is Cisco Systems, Incorporated 09:14:31	
16	(180 pages)		16	vs. Arista Networks, Incorporated. The case number	
17	Exhibit 147 Procket Networks PRO/8000 164		17	is 5:14-cv-05344.	
18	Series System Management and		18	Please note that audio and video recording	
19	Operations (604 pages)		19	will take place unless all parties agree to go off	
20	Exhibit 148 Cisco's 6th Supplemental 167		20	the record, and microphones are sensitive and may 09:14:53	
21	Response to Interrogatory NO.		21	pick up whispers, private conversations and cellular	
22	16 and Response to		22	interference; so please be aware of that.	
23	Interrogatory No. 19 Amended		23	Beginning with our noticing attorney,	
24	Exhibit F (45 pages)		24	please state your name and the firm you represent.	
25	Exhibit 149 List of Commands (1 page) 169		25	MR. WONG: Ryan Wong from Keker & Van Nest 09:15:05	
	Page 6			Page 8	
1	E X H I B I T S (continued)		1	for defendant Arista Networks.	
2	NUMBER DESCRIPTION PAGE		2	MR. FERRALL: Brian Ferrall, Keker & Van	
3			3	Nest, also for Arista.	
4	Exhibit 150 1/20/96 E-mail from Toni Li to 183		4	MR. PAK: Sean Pak of Quinn for Cisco.	
5	Bill W., CSI-CLI-00746246		5	THE VIDEOGRAPHER: Thank you. 09:15:16	
6	Exhibit 151 CSCdi14533, CSI-CLI-01339850 185		6	Will the court reporter please swear in the	
7	Exhibit 152 Group of E-mails Containing 239		7	witness.	
8	2/23/1996 E-mail from Tony Li		8		
9	to widmer@cisco.com,		9	ANTHONY J. LI,	
10	CSI-CLI-00746331 -		10	having been administered an oath, was examined and 09:15:19	
11	CSI-CLI-00746347		11	testified as follows:	
12			12		
13			13	EXAMINATION BY MR. WONG	
14			14		
15			15	Q. Good morning, Mr. Li. 09:15:29	
16			16	A. Good morning.	
17			17	Q. Please state your full name.	
18			18	A. Anthony Joseph Li.	
19			19	Q. Do you live in the Bay Area, Mr. Li?	
20			20	A. I do. 09:15:36	
21					
22					
23					
24			24	Q. Mr. Li, do you understand that are you	
25			25	testifying here in response to a subpoena in this 09:15:46	
	Page 7			Page 9	

3 (Pages 6 - 9)

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<p>1 lawsuit?</p> <p>2 A. I do.</p> <p>3 Q. Have you seen the subpoena in the lawsuit?</p> <p>4 A. Yes, I have.</p> <p>5 Q. Mr. Li, are you represented by an attorney 09:15:55</p> <p>6 at this deposition?</p> <p>7 A. No, I am not.</p> <p>8 Q. Have you been deposed before, Mr. Li?</p> <p>9 A. Yes, I have.</p> <p>10 Q. Okay. I'm just going to go over some of 09:16:03</p> <p>11 the ground rules of a deposition just to refresh how</p> <p>12 this goes.</p> <p>13 Mr. Li, do you understand that you are</p> <p>14 testifying under oath under penalty of perjury?</p> <p>15 A. I do. 09:16:14</p> <p>16 Q. Do you understand that the testimony that</p> <p>17 you are providing today is as if you were testifying</p> <p>18 in court?</p> <p>19 A. I do.</p> <p>20 Q. The court reporter is writing down 09:16:21</p> <p>21 everything that we say, so it's important to give</p> <p>22 verbal answers to my questions.</p> <p>23 Do you understand?</p> <p>24 A. I do.</p> <p>25 Q. It's also important that we don't speak 09:16:29</p> <p style="text-align: right;">Page 10</p>	<p>1 obviously if anything that's confidential to Cisco,</p> <p>2 I will be designating that as confidential under the</p> <p>3 protective order.</p> <p>4 THE WITNESS: Okay.</p> <p>5 BY MR. WONG: Q. And I will be taking 09:17:31</p> <p>6 breaks during the day, Mr. Li. I'll try to take a</p> <p>7 break about every hour.</p> <p>8 But if you would like to take a break for</p> <p>9 any reason, just let me know, and I will try to</p> <p>10 accommodate that, okay? 09:17:40</p> <p>11 A. Thank you.</p> <p>12 Q. Mr. Li, do you maintain a profile on the</p> <p>13 Web site called LinkedIn?</p> <p>14 A. I do.</p> <p>15 MR. WONG: Let's mark this as Exhibit 136, 09:18:01</p> <p>16 please.</p> <p>17 (Exhibit 136 was marked for identification</p> <p>18 by the court reporter and is attached hereto.)</p> <p>19 BY MR. WONG: Q. Court reporter has marked</p> <p>20 Exhibit 136. 09:18:19</p> <p>21 Mr. Li, do you have Exhibit 136 in front of</p> <p>22 you?</p> <p>23 A. I do.</p> <p>24 Q. Okay. Do you recognize Exhibit 136?</p> <p>25 A. This appears to be my profile for LinkedIn. 09:18:25</p> <p style="text-align: right;">Page 12</p>
<p>1 over each other. So I'll do my best to let you</p> <p>2 finish your answers before I ask the next question</p> <p>3 and I would ask that you let me finish my next</p> <p>4 question before you begin your answer.</p> <p>5 Is that clear? 09:16:41</p> <p>6 A. Yes.</p> <p>7 Q. If there is a question that I ask that you</p> <p>8 don't understand, please let me know, and I'll try</p> <p>9 to clarify it, okay?</p> <p>10 A. Okay. 09:16:48</p> <p>11 Q. Otherwise, if you answer my question, I'll</p> <p>12 assume that you understood my question.</p> <p>13 A. Okay.</p> <p>14 Q. Okay. Is there any reason, Mr. Li, that</p> <p>15 you can't give full and truthful testimony today? 09:16:57</p> <p>16 A. No.</p> <p>17 Q. Mr. Li, I know you're not represented by</p> <p>18 counsel today. If there is any answer that you</p> <p>19 provide today that you would like to request to</p> <p>20 designate confidential under the protective order in 09:17:09</p> <p>21 this case, please state that on the record.</p> <p>22 A. Okay.</p> <p>23 MR. PAK: Mr. Li, I'll also add that, on</p> <p>24 behalf of Cisco, I'll be making some objections from</p> <p>25 time to time just to preserve the record. And 09:17:21</p> <p style="text-align: right;">Page 11</p>	<p>1 Q. Can you please take a moment to look at</p> <p>2 Exhibit 136 and let me know if the information is</p> <p>3 up-to-date and accurate.</p> <p>4 A. It is accurate. It is reasonably</p> <p>5 up-to-date, but it is not complete. 09:18:48</p> <p>6 Q. What is incomplete about the information on</p> <p>7 Exhibit 136?</p> <p>8 A. In particular, it is not a complete list of</p> <p>9 patents and publications.</p> <p>10 Q. Is there anything else that is incomplete 09:19:01</p> <p>11 about Exhibit 136?</p> <p>12 A. I don't believe -- you know, my work</p> <p>13 history here only goes back to '91.</p> <p>14 Q. Anything else, Mr. Li?</p> <p>15 A. No. 09:19:21</p> <p>16 Q. What is your educational background,</p> <p>17 Mr. Li?</p> <p>18 A. I have a B.S. in mathematics from</p> <p>19 Harvey Mudd College and a Ph.D. in computer science</p> <p>20 from USC. 09:19:39</p> <p>21 Q. When did you receive your B.S. in</p> <p>22 mathematics from Harvey Mudd?</p> <p>23 A. '82.</p> <p>24 Q. And when did you receive your Ph.D. from</p> <p>25 USC? 09:19:49</p> <p style="text-align: right;">Page 13</p>

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<p>1 A. 1990.</p> <p>2 Q. And the USC you're referring to, that's the</p> <p>3 University of Southern California; correct?</p> <p>4 A. Correct.</p> <p>5 Q. Do you have any other degrees besides the 09:19:58</p> <p>6 bachelor's degree and your Ph.D.?</p> <p>7 A. No.</p> <p>8 Q. Your LinkedIn profile marked as Exhibit 136</p> <p>9 states that you attended Rutgers University; is that</p> <p>10 correct? 09:20:20</p> <p>11 A. I spent one year at Rutgers. Did not get a</p> <p>12 degree there.</p> <p>13 Q. Was your focus at the University of</p> <p>14 Southern California on anything in particular?</p> <p>15 A. I was working on a Ph.D. in computer 09:20:31</p> <p>16 science in the programming languages area.</p> <p>17 Q. What programming languages were you working</p> <p>18 on.</p> <p>19 A. So it was not a specific language. It was</p> <p>20 in language theory, and in particular I was working 09:20:47</p> <p>21 on compiler specifications.</p> <p>22 Q. What routing protocols, if any, did you</p> <p>23 learn about as part of obtaining your Ph.D. at USC?</p> <p>24 A. None; however, as a postdoc at USC, I</p> <p>25 actually worked on IDPR, Inter-Domain Policy 09:21:13</p> <p style="text-align: right;">Page 14</p>	<p>1 A. EGP is a routing protocol that allows</p> <p>2 individual hosts to advertise routing prefixes to</p> <p>3 the gateways of the then ARPANET or MILNET.</p> <p>4 Q. Is EGP a standardized routing protocol?</p> <p>5 A. Yes, it is. 09:23:29</p> <p>6 Q. How do you know that?</p> <p>7 A. I've read the RFC.</p> <p>8 Q. What is an RFC, Mr. Li?</p> <p>9 A. It as a Request For Comments that is a</p> <p>10 document from the Internet Engineering Task Force, 09:23:41</p> <p>11 IETF, that they use for standardizing protocols.</p> <p>12 I'm unaware of the exact standards placement of --</p> <p>13 or progression of EGP at this time. It's probably</p> <p>14 moved to historic by now.</p> <p>15 Q. When you say it's "moved to historic by 09:24:01</p> <p>16 now," what do you mean by that?</p> <p>17 A. So the IETF has a progression for</p> <p>18 standards, and standards that are no longer actively</p> <p>19 used or recommended are moved to historic to</p> <p>20 indicate that they are no longer productive. 09:24:19</p> <p>21 Q. You also mentioned IGRP. Can you describe</p> <p>22 to me what IGRP is.</p> <p>23 A. IGRP is Cisco's proprietary classful</p> <p>24 protocol.</p> <p>25 Q. When you say Cisco proprietary, what do you 09:24:40</p> <p style="text-align: right;">Page 16</p>
<p>1 Routing.</p> <p>2 Q. Inter-Domain Policy Routing?</p> <p>3 A. Correct. Also, while I was assist admin at</p> <p>4 USC, I was a network administrator, so I had</p> <p>5 familiarity there with EGP and IGRP. 09:21:41</p> <p>6 Q. What is EGP?</p> <p>7 A. Exterior Gateway Protocol.</p> <p>8 Q. And what is IGRP?</p> <p>9 A. Interior Gateway Routing Protocol.</p> <p>10 Q. You mentioned IDPR as part of your postdoc 09:22:06</p> <p>11 work; correct?</p> <p>12 A. Correct.</p> <p>13 Q. Can you describe for me how you worked with</p> <p>14 IDPR in your postdoc work at USC.</p> <p>15 A. So I was working for Deborah Estrin, and 09:22:24</p> <p>16 she was collaborating with Martha Steenstrup of</p> <p>17 Bolt, Beranek & Newman in Boston. They was a --</p> <p>18 they had some sort of research contract to develop a</p> <p>19 routing protocol that supported policy routing.</p> <p>20 Q. Was IDPR a proprietary standard? 09:22:43</p> <p>21 A. I have no idea.</p> <p>22 Q. You said you worked at -- you worked on EGP</p> <p>23 while as a sys admin at USC; is that correct?</p> <p>24 A. That's correct.</p> <p>25 Q. What is EGP? 09:23:07</p> <p style="text-align: right;">Page 15</p>	<p>1 mean by that?</p> <p>2 A. Cisco owns the code, has a patent on the --</p> <p>3 or on the concepts behind the implementation, and as</p> <p>4 far as I know, has not licensed it with the</p> <p>5 exception of licensing their whole source code 09:24:58</p> <p>6 stack.</p> <p>7 Q. How did you work with EGP while you were a</p> <p>8 sys admin?</p> <p>9 A. So I was responsible for maintaining EGP</p> <p>10 connectivity between USC's site and the ARPANET core 09:25:11</p> <p>11 gateways.</p> <p>12 Q. And what was your experience as a sys admin</p> <p>13 working with IGRP?</p> <p>14 A. So I was maintaining the Los Nettos Network</p> <p>15 which was a small regional network in Los Angeles. 09:25:24</p> <p>16 We used IGRP for routing between the sites and our</p> <p>17 small network.</p> <p>18 Q. And what period of time were you a sys</p> <p>19 admin for USC?</p> <p>20 A. Approximately 1983 through 1990. 09:25:36</p> <p>21 Q. Besides IDPR, EGP and IGRP, did you work</p> <p>22 with any other routing protocols while you were</p> <p>23 either obtaining your Ph.D. or serving as a postdoc?</p> <p>24 A. Probably. So I do not recall the details,</p> <p>25 but I do know that we had also a DECnet network, and 09:26:12</p> <p style="text-align: right;">Page 17</p>

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<p>1 I believe that DECnet routing was involved, and that</p> <p>2 is a -- uses an internal routing protocol that is</p> <p>3 very simple -- similar to RIP.</p> <p>4 Q. Now, you said DECnet. What is DECnet?</p> <p>5 A. DECnet was a proprietary networking stack 09:26:36</p> <p>6 from Digital Equipment Corporation.</p> <p>7 Q. So the DEC in DECnet stands for</p> <p>8 Digital Equipment Corporation?</p> <p>9 A. Yes.</p> <p>10 Q. When you say "we also had a DECnet 09:26:56</p> <p>11 network," who is "we"?</p> <p>12 A. I was referring to my employers at USC, in</p> <p>13 particular engineering computer services which then</p> <p>14 became university computing services.</p> <p>15 Q. What experience did you have working with 09:27:20</p> <p>16 the DECnet network at USC?</p> <p>17 A. Mostly it was frustrating. The DECnet</p> <p>18 network was interconnecting the router -- the</p> <p>19 various hosts around the campus, allowing students</p> <p>20 and faculty to move data around between the various 09:27:36</p> <p>21 computers.</p> <p>22 Q. What was the operating system like on the</p> <p>23 DECnet network?</p> <p>24 A. So we had multiple systems speaking DECnet.</p> <p>25 There were many VAXes running the VMS operating 09:27:54</p> <p style="text-align: right;">Page 18</p>	<p>1 A. I do.</p> <p>2 Q. What is a command line interface?</p> <p>3 A. A command line interface is a means for a</p> <p>4 user to enter commands typing out names of words and</p> <p>5 then interacting with a computer by having the 09:29:50</p> <p>6 computer respond to those words.</p> <p>7 Q. If I use the term "CLI," will you</p> <p>8 understand that I'm referring to a command line</p> <p>9 interface?</p> <p>10 A. I understand. 09:30:06</p> <p>11 Q. Did the VAX/VMS operating system have a</p> <p>12 command line interface?</p> <p>13 A. It did.</p> <p>14 Q. Can you describe for me generally how the</p> <p>15 VAX/VMS command line interface worked. 09:30:17</p> <p>16 A. It was a very standard command-and-response</p> <p>17 interface. Predominant were set and show. Change</p> <p>18 parameters and then display parameters.</p> <p>19 Q. When you say "very standard</p> <p>20 command-and-response interface," what do you mean by 09:30:39</p> <p>21 "very standard"?</p> <p>22 A. So very similar to other things in the</p> <p>23 industry.</p> <p>24 Q. At that time?</p> <p>25 A. Yes. 09:30:50</p> <p style="text-align: right;">Page 20</p>
<p>1 system. We also had several systems running</p> <p>2 TOPS-20.</p> <p>3 Q. You said VAX/VMS. Does that stand for</p> <p>4 anything?</p> <p>5 A. VAX is virtual address extension. VMS is 09:28:15</p> <p>6 virtual memory system.</p> <p>7 Q. How much experience did you have working</p> <p>8 with the VAX/VMS operating system?</p> <p>9 A. I was a system administrator for several</p> <p>10 years while at USC. 09:28:36</p> <p>11 Q. And how many years of experience did you</p> <p>12 have working with the TOPS-20 operating system?</p> <p>13 A. I was only a user of TOPS-20. I got my</p> <p>14 first TOPS-20 account in 1982. I probably used</p> <p>15 that -- well, at least eight years, so . . . 09:29:03</p> <p>16 Q. So as a user, you used TOPS-20 for</p> <p>17 approximately eight years?</p> <p>18 A. Yes.</p> <p>19 Q. And approximately how many years did you</p> <p>20 work as a system administrator [sic] for the VAX/VMS 09:29:17</p> <p>21 operating system?</p> <p>22 A. I'm not certain. I believe it was</p> <p>23 approximately 1983 through about 1987.</p> <p>24 Q. Mr. Li, do you know what a command line</p> <p>25 interface is? 09:29:40</p> <p style="text-align: right;">Page 19</p>	<p>1 Q. And approximately what time period are we</p> <p>2 talking about, Mr. Li?</p> <p>3 A. The first time I saw VMS was '81.</p> <p>4 Q. You mentioned that set and show commands</p> <p>5 were predominant in VAX/VMS; correct? 09:31:13</p> <p>6 A. Mm-hmm.</p> <p>7 Q. Were there any other commands that you</p> <p>8 recall from using the VAX/VMS command line</p> <p>9 interface?</p> <p>10 A. There were many other commands, and you 09:31:25</p> <p>11 could easily extend it by adding additional commands</p> <p>12 to it, so . . .</p> <p>13 Q. How would you extend it by adding</p> <p>14 additional commands to it?</p> <p>15 A. So the entire operating system CLI was 09:31:39</p> <p>16 built around what was called DCL, digital command</p> <p>17 language. You so actually write command definitions</p> <p>18 and add those to the CLI.</p> <p>19 Q. Were you familiar with digital command</p> <p>20 language at the time? 09:32:00</p> <p>21 A. Slightly.</p> <p>22 Q. Did the show commands in VAX/VMS follow any</p> <p>23 particular syntax?</p> <p>24 A. Yes. They typically were invoked by show</p> <p>25 and then usually an object name and then a set of 09:32:16</p> <p style="text-align: right;">Page 21</p>

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<p>1 parameters. The parameters were delineated by a</p> <p>2 slash and then parameter name. Sometimes there was</p> <p>3 a value attached with an equal sign and then a value</p> <p>4 attached to a given parameter. The set commands</p> <p>5 were pretty much the same way. 09:32:39</p> <p>6 Q. Now, you said, "typically were invoked" was</p> <p>7 part of your answer about how show commands worked.</p> <p>8 Were there any exceptions to the syntax you</p> <p>9 just described?</p> <p>10 A. Well, that was very much a generalization, 09:32:58</p> <p>11 so yes.</p> <p>12 Q. What was the command syntax like for</p> <p>13 TOPS-20?</p> <p>14 A. TOPS-20 had a command syntax that was</p> <p>15 somewhat similar to VMS. The notable difference was 09:33:22</p> <p>16 that TOPS-20 allowed for a command completion, and</p> <p>17 so you could use escape and tab and question mark</p> <p>18 characters to interact directly with the command</p> <p>19 line interpreter while you were typing a command</p> <p>20 line. 09:33:42</p> <p>21 Q. What type -- what time period are you</p> <p>22 talking about here, Mr. Li?</p> <p>23 A. I am unaware of when TOPS-20 first came</p> <p>24 out.</p> <p>25 Q. At what time period were you working with 09:33:54</p> <p style="text-align: right;">Page 22</p>	<p>1 feature while you were working with TOPS-20?</p> <p>2 A. Yes.</p> <p>3 Q. Is the recollection you just described</p> <p>4 based upon your hands-on experience with TOPS-20?</p> <p>5 A. Yes, it is. 09:35:27</p> <p>6 Q. Now, you said TOPS-20 had a similar syntax</p> <p>7 to VMS.</p> <p>8 What was similar about the TOPS-20 command</p> <p>9 syntax to the VAX/VMA command syntax?</p> <p>10 A. Again, the general intent of -- or design 09:35:58</p> <p>11 of the -- in the language was an imperative language</p> <p>12 where they would design it as verb and then noun,</p> <p>13 noun. So you would give the command as SHO and then</p> <p>14 some parameters to go with it.</p> <p>15 The details of the syntax were definitely 09:36:23</p> <p>16 different. TOPS-20 in particular never used a slash</p> <p>17 as a parameter separator.</p> <p>18 Q. Now, you've used the word "parameter" to</p> <p>19 describe the syntax for both VAX/VMS and TOPS-20?</p> <p>20 A. Mm-hmm. 09:36:46</p> <p>21 Q. What do you mean by a parameter?</p> <p>22 A. It's a qualifier or other conditional</p> <p>23 information about the specific request.</p> <p>24 Q. Can you give me an example of what would be</p> <p>25 a command parameter? 09:36:56</p> <p style="text-align: right;">Page 24</p>
<p>1 TOPS-20?</p> <p>2 A. Again, I got my first TOPS-20 account in</p> <p>3 1982.</p> <p>4 Q. Okay. So these features you just</p> <p>5 described, command completion, were those in TOPS-20 09:34:05</p> <p>6 when you first got your account in 1982?</p> <p>7 A. Yes.</p> <p>8 Q. What is command completion?</p> <p>9 A. Command completion is the ability for the</p> <p>10 command line interpreter to infer from what the user 09:34:25</p> <p>11 has typed as a partial command and then actually</p> <p>12 have it type out the rest of the command for the</p> <p>13 user.</p> <p>14 Q. Can you give me an example of how command</p> <p>15 completion would work in a TOPS-20 command line 09:34:41</p> <p>16 interface.</p> <p>17 A. Oh, dear. So not accurately.</p> <p>18 Approximately, you would type a partial command. So</p> <p>19 for example, if you were to type "SHO," S-H-O, and</p> <p>20 then complete it, you would get the W and then a 09:34:58</p> <p>21 space, so you could then enter a parameter.</p> <p>22 MR. PAK: I'm going to object that this</p> <p>23 calls for expert testimony. Speculation.</p> <p>24 BY MR. WONG: Q. Mr. Li, did you use the</p> <p>25 command -- did you use the command completion 09:35:17</p> <p style="text-align: right;">Page 23</p>	<p>1 A. For example, if the database of files had a</p> <p>2 set of file names, you could give a directory</p> <p>3 command which would show the files in the directory.</p> <p>4 Then you could also give directory followed by a</p> <p>5 parameter which would explain -- which would specify 09:37:17</p> <p>6 some subset of the files that you would like to see.</p> <p>7 Q. Besides VAX/VMS and TOPS-20, did you have</p> <p>8 experience with any other command line interfaces?</p> <p>9 A. Many.</p> <p>10 Q. Okay. What other command line interfaces 09:37:43</p> <p>11 do you have experience with, Mr. Li?</p> <p>12 A. That could take a while. CPM, VMCMS.</p> <p>13 Let's see. Concurrent CPM, MS-DOS, RSX-11M.</p> <p>14 Probably many others.</p> <p>15 Q. Which of those existed prior to 1985? 09:38:15</p> <p>16 A. All of those.</p> <p>17 Q. Did any of those exist prior to 1980?</p> <p>18 A. Yes, very definitely. Let's see. UNIX</p> <p>19 already existed. There was a CLI there. I believe</p> <p>20 that CPM predates 1980. 09:38:38</p> <p>21 Q. And did you work directly with all of the</p> <p>22 command line interfaces that you just recited?</p> <p>23 A. Yes.</p> <p>24 Q. In what capacity did you work with those</p> <p>25 command line interfaces? 09:39:02</p> <p style="text-align: right;">Page 25</p>

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<p>1 A. That varies. I was a programmer at</p> <p>2 Digital Research working on CPM, so I was a</p> <p>3 developer in that role. Most of the others I was a</p> <p>4 user.</p> <p>5 Q. When were you a programmer at 09:39:12</p> <p>6 Digital Research?</p> <p>7 A. So I had two summer internships, the</p> <p>8 summers of 1982 and 1981.</p> <p>9 Q. What was the command -- strike that.</p> <p>10 Actually, what was the command syntax used 09:39:34</p> <p>11 for CPM?</p> <p>12 A. Again, it was very similar to use -- what</p> <p>13 was used in TOPS-20 and VMS. Again, verb, noun and</p> <p>14 qualifiers.</p> <p>15 Q. What were some of the verbs that were used 09:39:52</p> <p>16 in the command set for CPM?</p> <p>17 A. I'm sorry. I've forgotten.</p> <p>18 Q. Do you recall any of the verbs that were</p> <p>19 used in the command sets for TOPS-20?</p> <p>20 A. Info, show, DIR. I've forgotten most of 09:40:07</p> <p>21 the others.</p> <p>22 Q. You mentioned MS-DOS as one of the command</p> <p>23 line interfaces that you had worked with; correct?</p> <p>24 A. Mm-hmm.</p> <p>25 Q. In what context did you work with MS-DOS? 09:40:30</p> <p style="text-align: right;">Page 26</p>	<p>1 accessible to the system administrator.</p> <p>2 Q. When you say "privileged," what do you mean</p> <p>3 by that?</p> <p>4 A. The system administration and management</p> <p>5 commands are -- cannot be executed by a normal user. 09:42:46</p> <p>6 Q. Were there similar separations of command</p> <p>7 sets in any of the other operating systems that we</p> <p>8 discussed this morning?</p> <p>9 A. Almost all have that kind of separation.</p> <p>10 Q. What -- describe for me the separation in 09:43:08</p> <p>11 command sets that existed in TOPS-20.</p> <p>12 A. As a user of TOPS-20, I don't recall the</p> <p>13 details of the administration commands, so I never</p> <p>14 used them.</p> <p>15 Q. Were the administration commands in TOPS-20 09:43:25</p> <p>16 accessible to you as a user?</p> <p>17 A. No.</p> <p>18 Q. How were command sets separated in VAX/VMS?</p> <p>19 A. Again, there were privileged commands that</p> <p>20 one could use if you were a system administrator. 09:43:46</p> <p>21 Q. Was the term "privileged" a term that you</p> <p>22 came up with, Mr. Li?</p> <p>23 A. No. I'm sure that several of -- I've</p> <p>24 picked that up somewhere, but that is commonly used.</p> <p>25 Q. That is commonly used to describe what? 09:44:14</p> <p style="text-align: right;">Page 28</p>
<p>1 A. Just as a user.</p> <p>2 Q. And that was in the early 1980s?</p> <p>3 A. At some point, yes.</p> <p>4 Q. You also mentioned UNIX as a system that</p> <p>5 you have experience with; correct? 09:40:54</p> <p>6 A. That's correct.</p> <p>7 Q. In what context did you work with the UNIX</p> <p>8 operating system?</p> <p>9 A. I had access to a UNIX system as a user</p> <p>10 starting in 1975. 09:41:03</p> <p>11 Q. Do you know how long UNIX has been in</p> <p>12 existence as an operating system?</p> <p>13 A. No, I don't.</p> <p>14 Q. And how many years did you work with the</p> <p>15 UNIX operating system? 09:41:22</p> <p>16 A. I've been working with it on and off since</p> <p>17 1975.</p> <p>18 Q. Can you describe for me how the UNIX CLI</p> <p>19 worked?</p> <p>20 A. UNIX CLI is, again, a command and 09:42:06</p> <p>21 parameters structure with a verb and then nouns and</p> <p>22 qualifiers behind it.</p> <p>23 Q. Were all commands available to a UNIX user?</p> <p>24 A. There are commands that are not available</p> <p>25 that they are -- they're privileged and only 09:42:33</p> <p style="text-align: right;">Page 27</p>	<p>1 A. Throughout the industry to indicate that</p> <p>2 people -- certain administrators have abilities that</p> <p>3 are past normal users.</p> <p>4 Q. Was the term "privileged" commonly used at</p> <p>5 the time that you were working on VAX/VMS? 09:44:30</p> <p>6 MR. PAK: Objection. Calls for expert</p> <p>7 testimony.</p> <p>8 BY MR. WONG: Q. Just to your</p> <p>9 recollection, Mr. Li.</p> <p>10 A. Yes. 09:44:40</p> <p>11 Q. And what facts are you basing that answer</p> <p>12 on?</p> <p>13 A. I was a system administrator for a VMS</p> <p>14 system.</p> <p>15 Q. Did you use the term "privileged" to 09:44:50</p> <p>16 describe commands that were accessible only to</p> <p>17 system administrators at the time you were working</p> <p>18 on VAX/VMS?</p> <p>19 A. Probably.</p> <p>20 Q. Was it likely that you were using that 09:45:03</p> <p>21 term?</p> <p>22 A. Very likely.</p> <p>23 Q. You mentioned VMCMS. What experience did</p> <p>24 you have working with VMCMS?</p> <p>25 A. So USC maintained, in addition to numerous 09:45:27</p> <p style="text-align: right;">Page 29</p>

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<p>1 DEC systems, also had several IBM systems. VMCMS is 2 an operating system for IBM mainframes, and USC had 3 one and I had an account on the VM system. 4 Q. And what was the command syntax like for 5 the CLI on VMCMS? 09:45:55 6 A. I'm sorry. I don't remember. 7 Q. You mentioned RSX-11M? 8 A. It's 11M. 9 Q. 11M. Sorry. 10 A. This was an operating system for PDP-11s. 09:46:06 11 Q. What are PDP-11s? 12 A. That was a computer built by 13 Digital Equipment Corporation. 14 Q. Do you recall the command syntax of the 15 command line interface used on the RSX-11M? 09:46:25 16 A. No, I'm sorry. I don't. 17 Q. You mentioned that the LinkedIn profile 18 that we marked as Exhibit 136 did not have your full 19 work history? 20 A. Correct. 09:46:46 21 Q. What work history is missing from your 22 LinkedIn profile? 23 A. In particular the sys admin positions that 24 I mentioned, summer internships predating. There 25 were several of those. Full-time positions that are 09:46:59 Page 30</p>	<p>1 projects throughout the router. I started off doing 2 mostly maintenance work and answering customer 3 questions. I then had several development projects. 4 My first development project was implementing 5 something called TCP header compression. 09:48:41 6 Q. And after you worked on TCP header 7 compression, what else did you work on while at 8 Cisco? 9 A. I had numerous routing -- small projects 10 within routing extending various interfaces and 09:48:58 11 extending protocols as necessary. 12 My next big project was actually working on 13 BGP, Border Gateway Protocol. 14 BY MR. WONG: Q. You mentioned TCP header 15 expression. What does TCP mean? 09:49:22 16 A. That's Transmission Control Protocol. It's 17 part of the Internet Protocol suite. 18 Q. Is TCP an industry standard? 19 A. It is. 20 Q. Was it an industry standard at the time you 09:49:37 21 worked on it at Cisco? 22 A. It was. 23 Q. What standard-setting body produced the TCP 24 standard? 25 A. That's a difficult question. The TCP 09:49:49 Page 32</p>
<p>1 not relevant to my professional experience, 2 particularly while I was in high school. 3 Q. Sure. After you graduated from USC, what 4 did you do then? 5 A. So I -- next fall I went to Rutgers and 09:47:20 6 spent a year there, hated it and immediately 7 transferred to USC. 8 Q. Oh, I'm sorry. My question was after you 9 graduated from USC, what did you do after that? 10 A. After USC? So I graduated in September 09:47:38 11 of 1990. I worked on a postdoc at USC with 12 Deborah Estrin and then took a position at 13 Cisco Systems. 14 Q. Do you know when you started at 15 Cisco Systems? 09:47:53 16 A. January 14th, 1991. 17 Q. Why did you join Cisco after graduating 18 from USC? 19 A. Lack of a better job. 20 Q. Did you apply elsewhere besides Cisco? 09:48:02 21 A. I did. 22 Q. And describe for me the projects that you 23 worked on while you worked at Cisco starting in 24 1991. 25 A. I worked on a wide, wide variety of 09:48:22 Page 31</p>	<p>1 standard was really a product of -- I guess the 2 ARPANET project, but this actually predates IETF 3 being accepted as a standards-making body, which is 4 a whole book in itself. Great deal of politics 5 behind that. So it was a de facto standard 09:50:16 6 effectively. 7 Q. What do you mean by "de facto standard"? 8 A. Which meant that the industry used it and 9 it was publicly available, everyone was free to 10 adopt it, and yet it did not have the backing of a 09:50:36 11 formal standards body such as the IEEE. 12 MR. PAK: I'll object to this line of 13 questioning as calling for expert testimony. 14 BY MR. WONG: Q. Now, you said that the 15 TCP standard was really a product of ARPANET; 09:51:10 16 correct? 17 A. Correct. 18 Q. What is ARPANET? 19 A. ARPANET was a project from the Defense 20 Department's Advanced Research Projects Agency to 09:51:18 21 build a network for computers that was highly robust 22 and relayed data between computers efficiently. 23 Q. How do you know that, Mr. Li? 24 A. Having worked on it for many, many years 25 and been involved with it as soon as it became 09:51:34 Page 33</p>

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<p>1 available to USC and Rutgers.</p> <p>2 Q. And by "it," you mean ARPANET?</p> <p>3 A. ARPANET.</p> <p>4 Q. You mentioned that TCP was part of an</p> <p>5 Internet Protocol suite. Is that what you said? 09:51:47</p> <p>6 A. Correct.</p> <p>7 Q. Were there any other protocols that were</p> <p>8 part of the Internet Protocol suite?</p> <p>9 A. Many.</p> <p>10 Q. Can you list off for me the protocols that 09:51:55</p> <p>11 you remember being part of the Internet Protocol</p> <p>12 suite.</p> <p>13 A. I'll give you a small set. HTTP; BGP; RIP,</p> <p>14 R-I-P; DNS; DHCP. I could go on, but Susan's</p> <p>15 fingers are going to fall off. 09:52:17</p> <p>16 Q. You mentioned HTTP.</p> <p>17 Is HTTP an industry standard?</p> <p>18 A. It is.</p> <p>19 Q. How do you know that?</p> <p>20 A. There is an RFC on it. I don't know what 09:52:31</p> <p>21 its exact standard status is but I believe it's at</p> <p>22 least proposed standard.</p> <p>23 Q. And how long has HTTP been an industry</p> <p>24 standard, to your knowledge?</p> <p>25 MR. PAK: Calls for expert testimony. 09:52:49</p> <p style="text-align: right;">Page 34</p>	<p>1 A. IETF.</p> <p>2 Q. What does HTTP stand for?</p> <p>3 A. Hypertext Transfer Protocol.</p> <p>4 Q. You mentioned RIP; correct?</p> <p>5 A. Correct. 09:54:18</p> <p>6 Q. What does -- is that -- is that called RIP</p> <p>7 by the industry?</p> <p>8 A. Normally pronounced that way, yes.</p> <p>9 Q. What does RIP stand for?</p> <p>10 A. Routing Information Protocol. 09:54:27</p> <p>11 Q. Routing Information Protocol is also part</p> <p>12 of the Internet Protocol suite you mentioned?</p> <p>13 A. It is.</p> <p>14 Q. Is Routing Information Protocol an industry</p> <p>15 standard? 09:54:43</p> <p>16 A. Yes, it is.</p> <p>17 Q. How long has Routing Information Protocol</p> <p>18 been an industry standard?</p> <p>19 A. I don't know when the RFC came out.</p> <p>20 Q. And what is the standard-setting body that 09:54:56</p> <p>21 manages the RIP protocol?</p> <p>22 A. IETF.</p> <p>23 Q. You mentioned DHCP?</p> <p>24 A. Correct.</p> <p>25 Q. What does DHCP stand for? 09:55:09</p> <p style="text-align: right;">Page 36</p>
<p>1 THE WITNESS: Approximately 1992.</p> <p>2 BY MR. WONG: Q. And how do you know that,</p> <p>3 Mr. Li?</p> <p>4 A. I first used a Web browser about that time,</p> <p>5 and had some involvement in developing a Web server 09:53:02</p> <p>6 for the Cisco router.</p> <p>7 Q. You mentioned BGP?</p> <p>8 A. Correct.</p> <p>9 Q. What does BGP stand for?</p> <p>10 A. Border Gateway Protocol. 09:53:23</p> <p>11 Q. And BGP was part of the Internet Protocol</p> <p>12 suite?</p> <p>13 A. Yes, it was.</p> <p>14 Q. Was BGP also an industry standard?</p> <p>15 A. It is. 09:53:33</p> <p>16 Q. And how do you know that, Mr. Li?</p> <p>17 A. I helped write the latest RFC on that.</p> <p>18 Q. How long has BGP been an industry standard,</p> <p>19 to your knowledge?</p> <p>20 A. BGP? 09:53:48</p> <p>21 Q. BGP.</p> <p>22 A. BGP has been an industry standard since</p> <p>23 approximately 1993.</p> <p>24 Q. And what is the standard-setting body that</p> <p>25 established BGP as an industry standard? 09:54:02</p> <p style="text-align: right;">Page 35</p>	<p>1 A. Dynamic Host Configuration Protocol.</p> <p>2 Q. And is DHCP also an industry standard?</p> <p>3 A. It is.</p> <p>4 Q. How do you know that, Mr. Li?</p> <p>5 A. I've read the RFC. 09:55:21</p> <p>6 Q. What is the standard-setting body that</p> <p>7 manages DHCP?</p> <p>8 A. The IETF.</p> <p>9 Q. How long has DHCP been an industry</p> <p>10 standard, to your knowledge? 09:55:42</p> <p>11 A. Since the early '90s.</p> <p>12 Q. And how do you know that, Mr. Li?</p> <p>13 A. He read the RFC.</p> <p>14 Q. Back in the early '90s?</p> <p>15 A. Yes. 09:55:51</p> <p>16 Q. Why were you -- strike that.</p> <p>17 Besides HTTP, BGP, RIP and DHCP, are there</p> <p>18 any other well-known protocols that are part of the</p> <p>19 Internet Protocol suite?</p> <p>20 A. Many. 09:56:13</p> <p>21 Q. Can you list for me a few more well-known</p> <p>22 protocols from the Internet Protocol suite?</p> <p>23 A. Well, the base protocol is IP, Internet</p> <p>24 Protocol. On top of that we have DNS, the Domain</p> <p>25 Name System. There's the File Transfer Protocol, 09:56:40</p> <p style="text-align: right;">Page 37</p>

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<p>1 FTP; the Simple Mail Transfer Protocol, SMTP; Post</p> <p>2 Office Protocol, POP; IMAP which is another mail</p> <p>3 protocol.</p> <p>4 Q. And the protocols you just mentioned, are</p> <p>5 all of them industry standards, to your knowledge? 09:57:04</p> <p>6 A. They are.</p> <p>7 Q. What standard-setting body manages the</p> <p>8 Internet Protocol?</p> <p>9 A. Internet Engineering Task Force.</p> <p>10 Q. And what standard-setting body manages the 09:57:17</p> <p>11 DNS protocol?</p> <p>12 A. IETF.</p> <p>13 Q. Is the IETF the standard-setting body for</p> <p>14 each of the protocols you just mentioned?</p> <p>15 A. Yes. 09:57:31</p> <p>16 Q. We just went through several acronyms for</p> <p>17 different industry standard protocols; correct?</p> <p>18 A. Yes.</p> <p>19 Q. Was "HTTP" a well-known term used in the</p> <p>20 networking industry at the time that you first 09:58:00</p> <p>21 started working with it?</p> <p>22 A. No, it was not well-known.</p> <p>23 Q. When did you start working with HTTP again?</p> <p>24 A. Very early '90s. Probably '92, '93 time</p> <p>25 frame. 09:58:17</p> <p style="text-align: right;">Page 38</p>	<p>1 connection collisions.</p> <p>2 MR. PAK: At this point I'd like to mark</p> <p>3 this deposition transcript as confidential</p> <p>4 information under the protective order.</p> <p>5 BY MR. WONG: Q. And approximately what 09:59:38</p> <p>6 time period did you work on this starter project on</p> <p>7 BGP?</p> <p>8 A. Approximately 1992.</p> <p>9 Q. What were you upgrading from BGP Version 2</p> <p>10 to BGP Version 3? 09:59:57</p> <p>11 A. So the internal implementation of BGP</p> <p>12 required a change. The version number required</p> <p>13 changing.</p> <p>14 Q. When you say "internal implementation,"</p> <p>15 what do you mean by that? 10:00:14</p> <p>16 A. The code that actually performs the</p> <p>17 functions inside the router.</p> <p>18 Q. And describe for me generally what is the</p> <p>19 function of a router?</p> <p>20 A. Its purpose is to receive packets and 10:00:34</p> <p>21 decide where they should go and then send them out</p> <p>22 to the best interface in the network.</p> <p>23 Q. When you say the word "interface," what do</p> <p>24 you mean by "interface"?</p> <p>25 A. That is the connection of the router to 10:00:58</p> <p style="text-align: right;">Page 40</p>
<p>1 Q. Did HTTP ever become a well-known acronym</p> <p>2 in the industry?</p> <p>3 A. Yes. It's very well-known.</p> <p>4 Q. It's very well-known today?</p> <p>5 A. Today. 09:58:27</p> <p>6 Q. Do you approximately when HTTP became a</p> <p>7 well-known acronym, to your knowledge?</p> <p>8 MR. PAK: Objection. Calls for expert</p> <p>9 testimony.</p> <p>10 THE WITNESS: Approximately 1995. 09:58:33</p> <p>11 BY MR. WONG: Q. Why do you say 1995,</p> <p>12 Mr. Li?</p> <p>13 A. That's when most people started using the</p> <p>14 Web.</p> <p>15 Q. Let's go back to your description of 09:58:40</p> <p>16 responsibilities when you were working at Cisco</p> <p>17 starting in 1991.</p> <p>18 The last thing you mentioned was that you</p> <p>19 started working on a BGP project; correct?</p> <p>20 A. Correct. 09:59:07</p> <p>21 Q. Describe for me what that BGP project</p> <p>22 entailed.</p> <p>23 A. So my starter project on BGP was to upgrade</p> <p>24 it from BGP Version 2 to Version 3 of the protocol.</p> <p>25 This involved adding a small mechanism for resolving 09:59:21</p> <p style="text-align: right;">Page 39</p>	<p>1 another router via a link of some flavor.</p> <p>2 Communications channel.</p> <p>3 Q. Was "router" a commonly used term at the</p> <p>4 time that you were working on this BGP project for</p> <p>5 Cisco? 10:01:17</p> <p>6 A. It was. It's also known as a gateway in</p> <p>7 some circumstances.</p> <p>8 Q. Were there any particular routers that your</p> <p>9 project applied to?</p> <p>10 A. In particular it applied to the Cisco AGS 10:01:42</p> <p>11 Plus and the remainder of Cisco's product line at</p> <p>12 the time.</p> <p>13 Q. After you worked on this BGP project, what</p> <p>14 else did you do at Cisco?</p> <p>15 A. I've worked on many different things. The 10:02:10</p> <p>16 silicon switch engine, various other routing</p> <p>17 protocol maintenance tasks, the router called GSR.</p> <p>18 Q. And just to be clear, Mr. Li, are we</p> <p>19 talking about the time period where you first</p> <p>20 started working at Cisco in 1991? 10:02:37</p> <p>21 A. That was just the '91 through '96 time</p> <p>22 frame.</p> <p>23 Q. Now, you mentioned performing various other</p> <p>24 routing protocol maintenance tasks.</p> <p>25 What other routing protocols did you work 10:02:54</p> <p style="text-align: right;">Page 41</p>

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<p>1 with during this 1991 through 1996 time period at 2 Cisco? 3 A. Everything else in the IP protocol suite 4 within Cisco. This includes RIP, IGRP, EIGRP, EGP, 5 OSPF, IS-IS. I also had my hands in some of the 10:03:14 6 CLNS stack. 7 Q. What is OSPF? 8 A. Open Shortest Path First routing protocol 9 from the IETF. 10 THE REPORTER: Would you mind repeating 10:03:43 11 that. I'm sorry. 12 THE WITNESS: Open Shortest Path First 13 routing protocol from the IETF. 14 THE REPORTER: Thank you. 15 BY MR. WONG: Q. And the RIP and the IGRP 10:03:51 16 you just mentioned, those are the same RIP and IGRP 17 you were discussing earlier today; correct? 18 A. Yes. 19 Q. You mentioned IS-IS. 20 What is IS-IS? 10:04:00 21 A. This is another routing protocol that comes 22 from the ISO protocol stack and the OSI standards 23 body. It supports routing for both CLNP and IP. 24 Q. What is CLNP? 25 A. Connectionless Network Protocol. 10:04:25 Page 42</p>	<p>1 A. The standard -- the standard for IS-IS. 2 MR. PAK: Ryan, when you get a chance, can 3 we take a break? We've been going for about an 4 hour. 5 MR. WONG: Sure. We can take a break now. 10:05:45 6 THE WITNESS: Thank you. 7 THE VIDEOGRAPHER: Going off the record. 8 The time is 10:05. 9 (Recess taken from 10:05 a.m. to 10 10:11 a.m.) 10:11:25 11 THE VIDEOGRAPHER: We're back on the 12 record. The time is 10:11. 13 BY MR. WONG: Q. Mr. Li, you used the 14 acronym BGP to refer to the Border Gateway Protocol; 15 correct? 10:11:46 16 A. Correct. 17 Q. Is BGP a commonly known acronym for Border 18 Gateway Protocol? 19 A. No, not common. 20 Q. Okay. Is it a -- strike that. 10:11:54 21 Why do you use the term "BGP" to refer to 22 the Border Gateway Protocol? 23 A. So that's the acronym that is used within 24 the industry. 25 Q. When you say that's the acronym that's used 10:12:10 Page 44</p>
<p>1 Q. And is that protocol also an industry 2 standard? 3 A. It is. 4 Q. What is the standard-setting body that 5 manages CLNP? 10:04:37 6 A. ISO. 7 Q. What is ISO? 8 A. International Standards Organization. 9 Although that's more formally it's -- the official 10 name is in French, so . . . 10:04:53 11 Q. When you were talking about IS-IS, you 12 mentioned the OSI standards body. 13 Do you remember that? 14 A. That's correct. 15 Q. What is the OSI standards body? 10:05:04 16 A. Open systems -- I don't remember the full 17 expansion. Sorry. 18 Q. Okay. So who was the standard-setting body 19 for IS-IS? 20 A. I believe that was -- falls under ISO which 10:05:20 21 is the child of OSI. 22 Q. And how do you know that, Mr. Li? 23 A. I've read the document. 24 Q. When you say "the document," do you mean 25 the -- 10:05:34 Page 43</p>	<p>1 within the industry, you're referring to the BGP 2 acronym; correct? 3 A. Correct. 4 Q. And when you say "the industry," what do 5 you mean by "the industry"? 10:12:21 6 A. Computer network. 7 Q. And how long as BGP been used as an acronym 8 within the computer networking industry, to your 9 knowledge? 10 A. Since BGP was first introduced, which I 10:12:42 11 believe was approximately 1989. 12 Q. Okay. And why do you use the term "RIP" or 13 R-I-P to refer to Router Information Protocol? 14 A. That is the common acronym used for that 15 protocol. 10:13:21 16 Q. In the networking industry? 17 A. In the networking industry. 18 Q. And how long has RIP been a commonly used 19 acronym in the networking industry? 20 A. I don't know. 10:13:30 21 MR. PAK: Objection. Calls for expert 22 testimony. 23 BY MR. WONG: Q. Okay. But to your 24 knowledge, it is a commonly used acronym in the 25 networking industry today? 10:13:39 Page 45</p>

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<p>1 A. It is.</p> <p>2 Q. Do you know when you first started using</p> <p>3 the acronym RIP?</p> <p>4 A. 1991 when I came to Cisco.</p> <p>5 Q. And did you come up with the acronym RIP? 10:13:48</p> <p>6 A. No, I did not.</p> <p>7 Q. Where did you get that acronym from?</p> <p>8 A. I heard it from coworkers first.</p> <p>9 Q. And you did not come with the acronym BGP;</p> <p>10 correct? 10:14:07</p> <p>11 A. Correct.</p> <p>12 Q. Where did you first hear the acronym BGP?</p> <p>13 A. From discussions on a Usenet mailing list.</p> <p>14 Q. What is a Usenet mailing list?</p> <p>15 A. Usenet was a system for exchanging 10:14:23</p> <p>16 messaging in a broadcast fashion, and there were</p> <p>17 groups within that where people would circulate</p> <p>18 messages. And so there was a discussion of routing</p> <p>19 protocols, and I heard about it first through that.</p> <p>20 Q. And what time period are you talking about 10:14:45</p> <p>21 here when you first heard the acronym BGP?</p> <p>22 A. This would be somewhere between about 1985</p> <p>23 to 1990.</p> <p>24 Q. So that was before you started working at</p> <p>25 Cisco; correct? 10:15:01</p> <p style="text-align: right;">Page 46</p>	<p>1 working for Cisco in 1991?</p> <p>2 A. Approximately three.</p> <p>3 Q. What was your familiarity with the command</p> <p>4 line interface on Cisco's routers before you started</p> <p>5 working at Cisco in 1991? 10:16:30</p> <p>6 A. So I used Cisco's CLI for those three years</p> <p>7 between '87 and 1991.</p> <p>8 Q. What level of familiarity -- strike that.</p> <p>9 Was OSPF a well-known acronym in the</p> <p>10 networking industry? Actually, strike that. 10:17:02</p> <p>11 Is OSPF a well-known acronym in the</p> <p>12 networking industry?</p> <p>13 A. Yes, it is very well-known.</p> <p>14 Q. And when did you first hear of the acronym</p> <p>15 OSPF, Mr. Li? 10:17:12</p> <p>16 A. As part of my employment at Cisco.</p> <p>17 Q. Approximately when did you hear -- first</p> <p>18 hear of OSPF?</p> <p>19 A. About 1992.</p> <p>20 Q. Approximately how long has "OSPF" been a 10:17:23</p> <p>21 well-known term in the networking industry, to your</p> <p>22 knowledge?</p> <p>23 MR. PAK: Objection. Calls for expert</p> <p>24 testimony.</p> <p>25 THE WITNESS: I suspect at least 1989. 10:17:32</p> <p style="text-align: right;">Page 48</p>
<p>1 A. Correct.</p> <p>2 Q. Is "IGRP" also a commonly used term in the</p> <p>3 networking industry?</p> <p>4 A. It is.</p> <p>5 Q. And how long, to your knowledge, has "IGRP" 10:15:17</p> <p>6 been a commonly used term in the networking</p> <p>7 industry?</p> <p>8 MR. PAK: Objection. Calls for expert</p> <p>9 testimony.</p> <p>10 THE WITNESS: I recall seeing it very early 10:15:24</p> <p>11 on. I first learned about it in 1987.</p> <p>12 BY MR. WONG: Q. And you did not come up</p> <p>13 with the acronym IGRP; right?</p> <p>14 A. No, I did not.</p> <p>15 Q. Do you recall how you first learned about 10:15:38</p> <p>16 the acronym IGRP?</p> <p>17 A. So I was asked to administer a Cisco router</p> <p>18 in 1987 and was -- did Cisco training and learned</p> <p>19 about IGRP through that training.</p> <p>20 Q. And that was before you joined Cisco in 10:15:58</p> <p>21 1991; right?</p> <p>22 A. That's correct. I was a customer before an</p> <p>23 employee.</p> <p>24 Q. How many years of experience did you have</p> <p>25 working with Cisco routers before you started 10:16:15</p> <p style="text-align: right;">Page 47</p>	<p>1 BY MR. WONG: Q. Why do you say that,</p> <p>2 Mr. Li?</p> <p>3 A. So there's work started on OSPF early on</p> <p>4 prior to my joining Cisco and prior to my learning</p> <p>5 about it, and I believe that was about '89. 10:17:44</p> <p>6 Q. When you say there was work started on</p> <p>7 OSPF, what are you referring to by that?</p> <p>8 A. This is work in the IETF to specify the</p> <p>9 protocol.</p> <p>10 Q. And how did you know that there was work 10:18:02</p> <p>11 started on OSPF by the IETF around 1989?</p> <p>12 A. So there was a discussion list about it,</p> <p>13 and I looked at some the history of OSPF and looked</p> <p>14 at the RFC that subsequently came out. I knew that</p> <p>15 folks had been working on it for quite some time. 10:18:33</p> <p>16 Q. Who was participating in the discussion</p> <p>17 list about OSPF at that 1989 time period?</p> <p>18 A. I --</p> <p>19 MR. PAK: Objection. Calls for</p> <p>20 speculation. 10:18:48</p> <p>21 THE WITNESS: So John Moy, Milo Medin,</p> <p>22 Vince Fuller, Cathy Wittbrodt. Don't remember the</p> <p>23 rest.</p> <p>24 BY MR. WONG: Q. And how do you know those</p> <p>25 individuals you just named were part of the 10:19:12</p> <p style="text-align: right;">Page 49</p>

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<p>1 discussion of OSPF in 1989?</p> <p>2 A. I subsequently worked with them as part of</p> <p>3 IETF and learned of their involvement with OSPF.</p> <p>4 Q. You worked -- strike that.</p> <p>5 When did you work with those individuals as 10:19:31</p> <p>6 part of the IETF?</p> <p>7 A. I started working with them in 1991.</p> <p>8 Q. What companies, if you recall, did those</p> <p>9 individuals work for?</p> <p>10 A. John Moy represented Proteon. Milo Medin 10:19:50</p> <p>11 worked for NASA. Cathy Wittbrodt was at</p> <p>12 Energy Sciences Network at -- as part of</p> <p>13 Lawrence Livermore Labs.</p> <p>14 Q. Did any other vendors -- strike that.</p> <p>15 Did any other companies or organizations 10:20:20</p> <p>16 besides the ones you just mentioned participate in</p> <p>17 OSPF standardization?</p> <p>18 MR. PAK: Objection. Calls for</p> <p>19 speculation. Calls for expert testimony.</p> <p>20 THE WITNESS: So I'm certain that several 10:20:32</p> <p>21 others did. The best way to check would be to look</p> <p>22 at the IETF attendance records.</p> <p>23 BY MR. WONG: Q. When you say you're</p> <p>24 certain that several others did, why are you so</p> <p>25 certain? 10:20:43</p> <p style="text-align: right;">Page 50</p>	<p>1 standard?</p> <p>2 A. Not offhand.</p> <p>3 Q. Is IS-IS a well-known acronym in the</p> <p>4 networking industry?</p> <p>5 A. Largely, no. 10:22:41</p> <p>6 Q. How do you know the IS-IS acronym?</p> <p>7 A. I'm part of a small group who've made use</p> <p>8 of the protocol.</p> <p>9 Q. Is IS-IS a well-known acronym amongst those</p> <p>10 who make use of the IS-IS protocol? 10:23:01</p> <p>11 A. Yes, it is.</p> <p>12 Q. Why is it a smaller group that makes use of</p> <p>13 the IS-IS protocol?</p> <p>14 A. So IS-IS is part of the ISO protocol stack</p> <p>15 which ended up not having a significant market 10:23:15</p> <p>16 share, and thus there's a very small user base.</p> <p>17 Only a very small portion of the I net -- IP</p> <p>18 networking industry ended up using IS-IS, and so the</p> <p>19 number of people that use IS-IS for IP routing is</p> <p>20 very, very small. 10:23:38</p> <p>21 Q. How long has IS-IS been a well-known</p> <p>22 acronym amongst those who make use of the IS-IS</p> <p>23 protocol, to your knowledge?</p> <p>24 A. At least 1991.</p> <p>25 Q. And when did -- when did you first hear of 10:23:50</p> <p style="text-align: right;">Page 52</p>
<p>1 A. The IETF typically has dozens of people</p> <p>2 operating, working together on any given protocol.</p> <p>3 Q. And how do you -- how do you know that,</p> <p>4 Mr. Li?</p> <p>5 A. So that's -- I started participating in the 10:20:57</p> <p>6 IETF in 1991, and that's their standard way of</p> <p>7 working.</p> <p>8 Q. How many years have you been participating</p> <p>9 in the IETF since 1991?</p> <p>10 A. I participated quite consistently up and 10:21:15</p> <p>11 through about -- from 1991 to about 1999, and then</p> <p>12 it's been sporadic since then.</p> <p>13 Q. When you say the IETF typically has dozens</p> <p>14 of people working together on any given protocol,</p> <p>15 are those people from the same company or different 10:21:42</p> <p>16 companies?</p> <p>17 MR. PAK: Objection. Calls for</p> <p>18 speculation. Vague.</p> <p>19 THE WITNESS: Typically the group --</p> <p>20 working groups that are working on a protocol draw 10:21:54</p> <p>21 people from all sorts of different companies and</p> <p>22 organizations.</p> <p>23 BY MR. WONG: Q. Can you think of any</p> <p>24 protocols from the IETF where different</p> <p>25 organizations did not participate in creating the 10:22:12</p> <p style="text-align: right;">Page 51</p>	<p>1 the IS-IS acronym?</p> <p>2 A. 1991 when I joined Cisco.</p> <p>3 Q. Is "IP" a well-known industry term in the</p> <p>4 networking industry?</p> <p>5 A. Very well. 10:24:07</p> <p>6 Q. In your view, what other acronyms are as</p> <p>7 well-known as IP in the networking industry?</p> <p>8 MR. PAK: Objection. Calls for expert</p> <p>9 testimony.</p> <p>10 THE WITNESS: TCP, TCP/IP, WWW. 10:24:19</p> <p>11 BY MR. WONG: Q. How long has IP been a</p> <p>12 well-known acronym in the networking industry?</p> <p>13 A. At least since 1983.</p> <p>14 Q. And when did you first learn of the acronym</p> <p>15 IP? 10:24:44</p> <p>16 A. Approximately 1984 I took a class in</p> <p>17 computer networking and read the -- first read the</p> <p>18 RFCs on IP.</p> <p>19 Q. Is BGP a -- let me start that again.</p> <p>20 Is "BGP" a well-known term in the 10:25:25</p> <p>21 networking industry?</p> <p>22 A. It is.</p> <p>23 Q. How long has "BGP" been a well-known term</p> <p>24 in the networking industry?</p> <p>25 MR. PAK: Objection. Calls for expert 10:25:34</p> <p style="text-align: right;">Page 53</p>

<p>1 testimony.</p> <p>2 THE WITNESS: Probably since about 1993.</p> <p>3 BY MR. WONG: Q. And why do you say that</p> <p>4 "BGP" has been a well-known term in the networking</p> <p>5 industry since 1993? 10:25:47</p> <p>6 A. I'm an expert in BGP.</p> <p>7 Q. Why do you say that you are an expert in</p> <p>8 BGP?</p> <p>9 A. I helped deploy BGP throughout the</p> <p>10 Internet. 10:26:00</p> <p>11 Q. What did you do to help deploy BGP</p> <p>12 throughout the Internet?</p> <p>13 A. So I was responsible for maintaining and</p> <p>14 enhancing BGP. I was responsible for doing a great</p> <p>15 deal of bug fixing to BGP. And as part of that, I 10:26:17</p> <p>16 ended up reimplementing much of Cisco's BGP code and</p> <p>17 replacing the vast majority of the code that they</p> <p>18 had.</p> <p>19 Q. And when did you first hear of the acronym</p> <p>20 BGP? 10:26:43</p> <p>21 A. Again, I believe it was in the late '80s as</p> <p>22 part of the Usenet group.</p> <p>23 Q. Is "DNS" a well-known term in the</p> <p>24 networking industry?</p> <p>25 A. It is. 10:27:07</p> <p style="text-align: right;">Page 54</p>	<p>1 What did that entail, maintaining DHCP</p> <p>2 relay functionality in Cisco IOS?</p> <p>3 A. Means that I had to look at the source</p> <p>4 code, read the DHCP RFC, test the behavior of the</p> <p>5 Cisco DHCP relay and then repair the functionality 10:28:49</p> <p>6 in the source code as necessary.</p> <p>7 Q. At some point, Mr. Li, you left Cisco's</p> <p>8 employment; correct?</p> <p>9 A. Several times.</p> <p>10 Q. When you started at Cisco in 1991, when did 10:29:12</p> <p>11 you leave?</p> <p>12 A. I believe it was 1996.</p> <p>13 Q. What did you do after you left Cisco in</p> <p>14 1996?</p> <p>15 A. After a while I joined Juniper Networks. 10:29:28</p> <p>16 Q. And what was Juniper's business at the</p> <p>17 time?</p> <p>18 A. Juniper was a startup in the computer</p> <p>19 networking space.</p> <p>20 Q. What was Juniper's main product at the 10:29:41</p> <p>21 time?</p> <p>22 A. They had no product initially, and their</p> <p>23 first product was a router, the M40, and I believe</p> <p>24 that came out in 1998.</p> <p>25 Q. Did you work on the M40 Juniper router? 10:29:59</p> <p style="text-align: right;">Page 56</p>
<p>1 Q. How long has "DNS" been a well-known term</p> <p>2 in the networking industry, Mr. Li?</p> <p>3 A. At least since late '80s.</p> <p>4 Q. When did you first learn of the term "DNS"?</p> <p>5 A. I was a sys admin at USC at the time. 10:27:19</p> <p>6 Could have been anywhere from '83 on.</p> <p>7 Q. How do you know that "DNS" has been a</p> <p>8 well-known term in the networking industry since the</p> <p>9 late 1980s?</p> <p>10 A. So I would helped convert USC from using 10:27:40</p> <p>11 host.text, which was previous system, to using DNS.</p> <p>12 Q. Is "DHCP" a well-known term in the</p> <p>13 networking industry?</p> <p>14 A. It is.</p> <p>15 Q. How long has "DHCP" been a well-known term 10:28:00</p> <p>16 in the networking industry?</p> <p>17 A. I don't know.</p> <p>18 Q. When did you first hear of the acronym</p> <p>19 DHCP?</p> <p>20 A. Probably 1991. 10:28:08</p> <p>21 Q. Why do you think you first heard of DHCP in</p> <p>22 1991?</p> <p>23 A. I helped maintain DHCP relay functionality</p> <p>24 in Cisco IOS.</p> <p>25 Q. What did that -- strike that. 10:28:21</p> <p style="text-align: right;">Page 55</p>	<p>1 A. I did.</p> <p>2 Q. Now, you said Juniper had no product</p> <p>3 initially.</p> <p>4 Did they have no product when you joined</p> <p>5 them in 1996? 10:30:16</p> <p>6 A. That's correct. We were a startup. We</p> <p>7 had -- I was Employee No. 5. We had an office, and</p> <p>8 that was it.</p> <p>9 Q. Who were Juniper's competitors?</p> <p>10 A. At the time it was Cisco. I believe Pluris 10:30:30</p> <p>11 came along shortly thereafter, but I don't know</p> <p>12 exactly when. There was another company called</p> <p>13 NetStar. Wellfleet. Proteon had not quite gone</p> <p>14 under.</p> <p>15 That's all I can remember. 10:31:03</p> <p>16 Q. Now, you said you were Employee No. 5;</p> <p>17 correct?</p> <p>18 A. Correct.</p> <p>19 Q. Where did the other first employees at</p> <p>20 Juniper come from? 10:31:15</p> <p>21 A. So the founder Pradeep Sindhu was coming</p> <p>22 out of Xerox PARC and Sun. Bjorn Liencres I believe</p> <p>23 was Sun. Dennis Ferguson, I knew him through IETF,</p> <p>24 and he was at -- running CANet, although I don't</p> <p>25 know who he was affiliated with. 10:31:36</p> <p style="text-align: right;">Page 57</p>

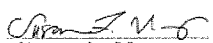
<p>1 Q. What was your involvement in -- strike</p> <p>2 that.</p> <p>3 What is Exhibit 139?</p> <p>4 A. It appears to be a copy of RFC 1887.</p> <p>5 Q. What was your involvement in RFC 1887, 11:46:30</p> <p>6 Mr. Li?</p> <p>7 A. So Yakov and I coauthored or coedited this</p> <p>8 document in an attempt to document a routing</p> <p>9 protocol architecture -- a routing architecture for</p> <p>10 IPv6. 11:46:45</p> <p>11 Q. What is IPv6?</p> <p>12 A. That is the next version of the Internet</p> <p>13 Protocol. What a widely deployed right now today is</p> <p>14 known as IPv4. It has the problem that it does not</p> <p>15 have enough address space and can only support about 11:46:59</p> <p>16 4 billion hosts.</p> <p>17 IPv6 is a -- the next version that has been</p> <p>18 approved by the IETF and we're currently</p> <p>19 transitioning to IPv6, slowly.</p> <p>20 Q. We're currently transitioning today, you 11:47:17</p> <p>21 mean?</p> <p>22 A. Yes. Twenty years and counting.</p> <p>23 Q. And I'm sorry. What was the date on the</p> <p>24 document marked as Exhibit 138, Mr. Li?</p> <p>25 A. That appears to be March 1995. 11:47:33</p> <p style="text-align: right;">Page 106</p>	<p>1 acronym was designated by the IETF.</p> <p>2 Q. What do you mean, "this acronym was</p> <p>3 designated by the IETF"?</p> <p>4 A. So the IETF, in selecting this protocol to</p> <p>5 migrate to, decided that we should all refer to 11:49:10</p> <p>6 version 6 of the protocol as IPv6.</p> <p>7 Q. And how do you know that the IETF decided</p> <p>8 that we all should refer to version 6 of the IP</p> <p>9 protocol as IPv6?</p> <p>10 A. I was there as part of the discussion. 11:49:27</p> <p>11 Q. What vendors were part of that discussion?</p> <p>12 A. I'm sorry. I don't recall.</p> <p>13 Q. Were there more than one vendor part of</p> <p>14 that discussion?</p> <p>15 A. Yes, many. 11:49:40</p> <p>16 Q. Do you recall if Cisco was part of that</p> <p>17 discussion?</p> <p>18 A. I believe so.</p> <p>19 Q. Do you recall if Juniper was part of that</p> <p>20 discussion? 11:49:48</p> <p>21 A. I believe so.</p> <p>22 Q. Were there any other acronyms relating to</p> <p>23 routing protocols that the IETF decided should be</p> <p>24 used to refer to those protocols?</p> <p>25 A. Yes, many. 11:50:05</p> <p style="text-align: right;">Page 108</p>
<p>1 Q. Was this document -- strike that.</p> <p>2 When was the first version of the document</p> <p>3 marked as 138 completed, to your knowledge?</p> <p>4 A. I would have to check my notes to be</p> <p>5 precise but somewhere approximately 1994. 11:48:04</p> <p>6 Q. Turning back to Exhibit 139, Mr. Li, what</p> <p>7 is the date on this document?</p> <p>8 A. December 1995.</p> <p>9 Q. Is that the publication date for this RFC?</p> <p>10 A. Yes, it is. 11:48:19</p> <p>11 Q. And was the document that is shown</p> <p>12 Exhibit 139, was that completed before the</p> <p>13 publication date shown on Exhibit 139?</p> <p>14 A. Yes, it was.</p> <p>15 Q. Do you know approximately when? 11:48:34</p> <p>16 A. Somewhere between '93 and '94.</p> <p>17 Q. Did you come up with the term "IPv6,"</p> <p>18 Mr. Li?</p> <p>19 A. No, I did not.</p> <p>20 Q. Do you know who? 11:48:42</p> <p>21 A. No. Can't be specific.</p> <p>22 Q. Is IPv6 a well-known acronym in the</p> <p>23 networking industry?</p> <p>24 A. Yes, it is. It is a well-known acronym for</p> <p>25 Internet Protocol version 6, and this -- this 11:48:53</p> <p style="text-align: right;">Page 107</p>	<p>1 Q. What protocols did the IETF decide that</p> <p>2 everyone in the network industry should use in</p> <p>3 addition to IPv6?</p> <p>4 MR. PAK: Objection. Calls for expert</p> <p>5 testimony. 11:50:18</p> <p>6 THE WITNESS: So OSPF, BGP, RSVP, LDP,</p> <p>7 HTTP.</p> <p>8 BY MR. WONG: Q. Was "IS-IS" a -- a</p> <p>9 term -- strike that.</p> <p>10 Did the IETF have any role in the decision 11:50:50</p> <p>11 for IS-IS to be used by the networking industry?</p> <p>12 A. Somewhat. Again, IS-IS was originally</p> <p>13 standardized outside of the IETF. The IETF had the</p> <p>14 responsibility of managing the usage of IS-IS for</p> <p>15 Internet Protocol routing. 11:51:14</p> <p>16 Q. And to your knowledge, Mr. Li, based on</p> <p>17 your experience working in the industry, did various</p> <p>18 vendors use those acronyms that you just listed out</p> <p>19 for me?</p> <p>20 A. Yes, frequently. 11:51:38</p> <p>21 Q. To what extent was there any belief that</p> <p>22 these acronyms for routing protocols were</p> <p>23 proprietary to any single vendor?</p> <p>24 MR. PAK: Objection. Calls for</p> <p>25 speculation. 11:51:58</p> <p style="text-align: right;">Page 109</p>

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CONFIDENTIAL INFORMATION UNDER THE PROTECTIVE ORDER

<p>1 THE WITNESS: So the acronyms were never 2 proprietary. 3 BY MR. WONG: Q. And on what facts do you 4 base that opinion, Mr. Li? 5 A. So the acronyms were never published with a 11:52:06 6 trademark or copyright notice attached to them. 7 Q. Did you ever believe personally that the 8 use of OSPF, BGP, IP or any of the other acronyms 9 that we've been discussing today were proprietary to 10 any vendor? 11:52:32 11 A. No. 12 Q. In your experience at multiple companies in 13 the networking industry, did anybody else that you 14 worked with express the belief to you that any of 15 these acronyms were proprietary to any vendor? 11:52:48 16 A. No. 17 Q. So in the 25 years that you have been 18 working in the networking industry, you have not 19 heard anybody express the belief that any of these 20 acronyms were proprietary to a single vendor? 11:53:08 21 A. That's correct. 22 Q. Turning back to Exhibit 139, Mr. Li, first 23 page further down, second paragraph from the bottom, 24 the word "domain" is used. 25 Do you see that? 11:53:23</p> <p style="text-align: right;">Page 110</p>	<p>1 by the court reporter and is attached hereto.) 2 BY MR. WONG: Q. The court reporter has 3 marked as Exhibit 140 a document bearing Control 4 Nos. ARISTANDCA00025927 to -25933. 5 Mr. Li, have you seen this document before? 11:55:28 6 A. I believe so. 7 Q. What is the document marked as Exhibit 140? 8 A. It appears to be a copy of RFC 1966, BGP 9 Route Reflection. 10 Q. Did you -- what was your involvement, if 11:55:45 11 any, in the creation of the document marked as 12 Exhibit 140? 13 A. So I helped discuss many of the concepts in 14 this document. As part of the development and 15 deployment of BGP, we found that we had numerous 11:56:02 16 scalability issues that we needed to overcome. 17 There were several approaches proposed. I helped 18 work on the Route Reflection proposal. 19 Some of the original work was proposed by 20 Dmitry Haskin of Bay Networks. And as part of the 11:56:20 21 IDR working group, we jointly discussed and came up 22 with this proposal. 23 Mr. Bates and Mr. Chandra eventually wrote 24 up the actual document as you see it here. 25 Q. What is BGP Route Reflection? 11:56:34</p> <p style="text-align: right;">Page 112</p>
<p>1 A. Yes. 2 Q. Did you come up with the word "domain"? 3 A. No, I did not. 4 Q. Do you know who did? 5 A. I believe that was Dr. Rechter. 11:53:31 6 Q. Do you know when Dr. Rechter came up with 7 the name "domain"? 8 A. I believe that he came up with that term 9 during the work for IDR, and that flowed -- and it 10 is semantically equivalent to Autonomous System, and 11:53:49 11 it flowed from his work in IDR into both this 12 document and the BGP specification. 13 Q. And how do you -- how do you know that, 14 Mr. Li? 15 A. Direct work with both of those 11:53:58 16 specifications. 17 Q. Okay. By the time of this RFC, 18 December 1995, was "domain" a well-known industry 19 term? 20 MR. PAK: Objection. Vague. 11:54:10 21 THE WITNESS: No, it was not well-known and 22 still is not very well-known. 23 MR. WONG: Let's mark this one as 140, 24 please. 25 (Exhibit 140 was marked for identification 11:54:45</p> <p style="text-align: right;">Page 111</p>	<p>1 A. BGP Route Reflection is a mechanism for 2 taking routing information and reflecting it from 3 one router to another through a third router. This 4 allows for better scalability because it fixes the 5 problem where BGP previously had where all BGP 11:57:03 6 routers within a particular AS had to be directly 7 interconnected. That led to some significant 8 computational and configuration management 9 challenges. 10 Q. Who came up with the phrase "Route 11:57:17 11 Reflection"? 12 A. I believe, but I'm not certain, that that 13 would be Mr. Haskin. 14 Q. And Mr. Haskin, to your recollection, 15 worked for Bay Networks? 11:57:33 16 A. It may have been Wellfleet at the time. 17 Q. And just by implication from your answer, 18 was Wellfleet acquired by Bay Networks? 19 A. Bay and -- I'm sorry. 20 Yes. Bay -- Bay was the merger of Synoptix 11:57:52 21 and Wellfleet, and I believe he was on the Wellfleet 22 side. 23 Q. And why do you think that Mr. Haskin came 24 up with the phrase "Route Reflection"? 25 A. So I believe he was the first one at IDR 11:58:11</p> <p style="text-align: right;">Page 113</p>

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<p>1 standards organization like IETF?</p> <p>2 A. I have never seen anyone do that. I have</p> <p>3 never seen Cisco have any UI patents; so I don't</p> <p>4 understand.</p> <p>5 Q. Mr. Li, is there any other views or 04:15:36</p> <p>6 opinions that you have with respect to this case</p> <p>7 that you have not shared with us on the record that</p> <p>8 you would like to share with us now?</p> <p>9 MR. WONG: Objection. Vague.</p> <p>10 THE WITNESS: I don't understand your 04:15:55</p> <p>11 question.</p> <p>12 BY MR. PAK: Q. We talked about a lot of</p> <p>13 different topics. I'm giving you the opportunity to</p> <p>14 provide any further testimony that you would like on</p> <p>15 any of these topics if you'd like it. 04:16:05</p> <p>16 A. So I don't understand what intellectual</p> <p>17 property people think there is in some CLI syntax.</p> <p>18 The intellectual property is -- that's of</p> <p>19 significance gets covered in patents. If we thought</p> <p>20 it was worth protecting, we would copyright it. We 04:16:22</p> <p>21 would patent it.</p> <p>22 MR. WONG: Object to the form of the</p> <p>23 question.</p> <p>24 BY MR. PAK: Q. Do you believe that</p> <p>25 copyright is a form of intellectual property? 04:16:34</p> <p style="text-align: right;">Page 254</p>	<p>1 THE VIDEOGRAPHER: Okay. This marks the</p> <p>2 end of DVD No. 4 in the deposition of Anthony Li.</p> <p>3 Going off the record. The time is 4:17. 04:17:29</p> <p>4 (TIME NOTED: 4:17 p.m.)</p> <p>5 --o0o--</p> <p>6</p> <p>7</p> <p>8</p> <p>9</p> <p>10</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 256</p>
<p>1 MR. WONG: Objection. Calls for opinion</p> <p>2 testimony.</p> <p>3 THE WITNESS: It calls for legal testimony.</p> <p>4 I don't understand.</p> <p>5 BY MR. PAK: Q. What is your understanding 04:16:44</p> <p>6 of copyright law?</p> <p>7 MR. WONG: Same objection.</p> <p>8 THE WITNESS: Vague as best.</p> <p>9 BY MR. PAK: Q. I take it, sir, that you</p> <p>10 haven't analyzed any copyright laws relating to 04:16:56</p> <p>11 interface, APIs, user interfaces?</p> <p>12 A. I know that I'm supposed to put a copyright</p> <p>13 notice in the top of every source code file. That's</p> <p>14 about all I know.</p> <p>15 Q. Okay. 04:17:08</p> <p>16 A. I can't even tell you for certain what I'm</p> <p>17 supposed to put in the top of the file because</p> <p>18 nobody can tell me exactly how I should deal with</p> <p>19 multiple years.</p> <p>20 MR. PAK: Thank you. Sir, I think those 04:17:18</p> <p>21 are the questions I have for you today.</p> <p>22 MR. WONG: I have no further questions.</p> <p>23 ////</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 255</p>	<p>1 I, ANTHONY J. LI, do hereby declare under</p> <p>2 penalty of perjury that I have read the foregoing</p> <p>3 transcript; that I have made any corrections as appear</p> <p>4 noted, in ink, initialed by me, or attached hereto; that</p> <p>5 my testimony as contained herein, as corrected, is true</p> <p>6 and correct.</p> <p>7 Executed this _____ day of _____,</p> <p>8 2016, at _____, _____.</p> <p>9 (city) (state)</p> <p>10</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15 ANTHONY J. LI</p> <p>16 Volume I</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 257</p>

<p>1 I, the undersigned, a Certified Shorthand 2 Reporter of the State of California, do hereby 3 certify: 4 That the foregoing proceedings were taken 5 before me at the time and place herein set forth; 6 that any witnesses in the foregoing proceedings, 7 prior to testifying, were administered an oath; that 8 a record of the proceedings was made by me using 9 machine shorthand which was thereafter transcribed 10 under my direction; that the foregoing transcript is 11 a true record of the testimony given. 12 Further, that if the foregoing pertains to 13 the original transcript of a deposition in a Federal 14 Case, before completion of the proceedings, review 15 of the transcript [X] was [] was not requested. 16 I further certify I am neither financially 17 interested in the action nor a relative or employee 18 of any attorney or any party to this action. 19 IN WITNESS WHEREOF, I have this date 20 subscribed my name. 21 Dated: February 3, 2016 22 23 24  Susan F. Magee 25 CSR No. 11661, RPR, CCRR, CLR</p>	
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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

CISCO SYSTEMS, INC.,
Plaintiff,
vs. No. 5:14-cv-05344-BLF(PSG)
ARISTA NETWORKS, INC.,
Defendant.

CONFIDENTIAL PURSUANT TO THE PROTECTIVE ORDER

VIDEOTAPED DEPOSITION OF TONG LIU
FRIDAY, JANUARY 15, 2016
PALO ALTO, CALIFORNIA

Reported by:
ANDREA M. IGNACIO, CSR, RPR, CRR, CCRR, CLR
CSR LICENSE NO. 9830
JOB NO. 2211574
Pages 1 - 215

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1 APPEARANCES:

2
3
4 ON BEHALF OF THE PLAINTIFF CISCO SYSTEMS, INC., and
5 the WITNESS:

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21
22 ALSO PRESENT: Kevin Foor, Videographer

23
24 ---oOo---

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1 UNITED STATES DISTRICT COURT
2 NORTHERN DISTRICT OF CALIFORNIA
3 SAN JOSE DIVISION

4
5 CISCO SYSTEMS, INC.,
6 Plaintiff,
7 vs. No. 5:14-cv-05344-BLF(PSG)
8 ARISTA NETWORKS, INC.,
9 Defendant.

10
11
12
13
14 Videotaped Deposition of Tong Liu, taken on
15 Friday, January 15, 2016, pursuant to notice, on
16 behalf of the Defendants, at 610 Page Mill Road,
17 Palo Alto, California before me, ANDREA M. IGNACIO,
18 CSR, RPR, CRR, CCRR, CLR ~ CSR License No. 9830

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3 WITNESS: Tong Liu

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5 EXAMINATION PAGE
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7 By Mr. Pak 185

8 EXHIBITS

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10 EXHIBIT PAGE
11 Exhibit 92 Amended Exhibit F; 45 pgs. 67
12 Exhibit 93 IEEE Standard for a Precision 84
13 Clock Synchronization Protocol
14 for Networked Measurement and
15 Control Systems, Bates
16 ARISTANDCA00031733 - '32021;
17 289 pgs.
18 Exhibit 94 IEEE1588 Precision Time Protocol 100
19 Platform-Independent Software
20 Functional Specification, Bates
21 CSI-CLI-00610555 - '81; 27 pgs.
22 Exhibit 95 6-25-08 E-mail, Subject: Seeking 122
23 permission for adding PTP CLI
24 comments; Bates CSI-CLI-00846643;
25 1 pg.

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EXHIBITS (Continued.)

EXHIBIT PAGE

Exhibit 96 6-25-08 E-mail, Subject: Seeking 124
permission for adding PTP CLI
commands, Bates CSI-CLI-00608739
- '40; 2 pgs.

Exhibit 97 6-26-08 E-mail, Subject: Seeking 128
permission for adding PTP CLI
commands, Bates CSI-CLI-00846656
- '57; 2 pgs.

Exhibit 98 Cisco Nexus 7000 Series NX-OS 157
System Management Command
Reference, Bates CSI-CLI-00194055
- '9480; 626 pgs.

---oOo---

PREVIOUSLY MARKED EXHIBITS

Exhibit 53 CLI Design and Review Guide, Bates
CSI-ANI-00073381 - '.000014; 15 pgs.

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PALO ALTO, CALIFORNIA
FRIDAY, JANUARY 15, 2016
9:32 A.M.

THE VIDEOGRAPHER: Good morning. We are on
the record at 9:32 on January 15th of the year 2016.
This is the video deposition of Tong Liu.

My name is Kevin Foor. I'm here with court
reporter Andrea Ignacio. And we are here from
Veritext Legal Solutions at the request of Keker &
Van Nest.

This deposition is being held at Wilson
Sonsini Goodrich & Rosati in Palo Alto.

The caption of the case is Cisco Systems,
Inc., v. Arista Networks. That is case 514-CV-05344
ELF BSG.

Please note that audio and video recording
will take place unless all parties agree to go off the
record. Microphones are sensitive and may pick up
whispers, private conversations, and cell
interference.

I'm not related to any party in this action,
nor am I interested financially in the outcome in any

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way.

If there are any objections to proceeding,
please state them at the time of your appearance.

And if you would please state your
appearances.

MR. WONG: Ryan Wong from Keker & Van Nest
for defendant Arista Networks.

MR. PAK: Sean Pak of Quinn Emanuel,
representing Cisco and the witness.

THE VIDEOGRAPHER: Thank you.

If the court reporter would please swear the
witness, we can begin.

TONG LIU,

having been sworn as a witness
by the Certified Shorthand Reporter,
testified as follows:

EXAMINATION

BY MR. WONG:

Q Good morning, Ms. Liu.

A Good morning.

Q Please state your full name for the record.

A Tong Liu.

Q Do you go by any other names, Ms. Liu?

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A At work, I go with Toni.

Q Could you spell Toni for me, please.

A T-O-N-I.

Q Okay. Have you gone by Toni Liu for -- for
what period of time have you gone by Toni Liu?

A That name is only used at work. It's not an
officially alternative name.

Q Thank you.

Who is your current employer, Ms. Liu?

A Aruba Networks.

Q Do you have a work address for Aruba
Networks?

A 1322 Crossman Avenue, Sunnyvale.

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1 MR. WONG: You testified earlier that PTP was
 2 one of the protocols identified to be interoperative.
 3 Q Were there -- were you aware of any other
 4 protocols that were identified to be interoperative?
 5 A I'm not aware of that.
 6 Q Okay. But you were aware that PTP was
 7 identified?
 8 A Right.
 9 Q And do you know which other vendors supported
 10 PTP, based upon your team's investigation, before
 11 adding PTP to the industrial Ethernet products?
 12 A Siemens is one vendor.
 13 Q Okay. So Siemens supported PTP in its
 14 devices before PTP functionality was added to the
 15 Cisco industrial Ethernet devices; correct?
 16 MR. PAK: Objection; calls for speculation.
 17 THE WITNESS: I don't know the -- I don't
 18 recall the exact details, but I do remember Siemens
 19 was mentioned in our previous conversations. I mean,
 20 the -- was in the team.
 21 MR. WONG: Oh.
 22 Q Siemens was --
 23 A I --
 24 Q Sorry. Go ahead.
 25 A Yes, as one important vendor for industrial

1 Ethernet device, and you worked on implementing that?
 2 A Right.
 3 Q Okay. And you don't know the reasons behind
 4 the decision to add PTP functionality -- well,
 5 actually, strike that.
 6 So did you see the IEEE PTP standard before
 7 you began adding PTP functionality to the Cisco
 8 industrial Ethernet device?
 9 A When you say "before," it's before I started
 10 writing code?
 11 Q Yes.
 12 A I -- yes, I read the spec --
 13 Q Okay.
 14 A -- for understanding -- to understand how it
 15 works.
 16 Q I see.
 17 So you read the -- and by "the spec," you
 18 mean the IEEE PTP spec?
 19 A Yes.
 20 Q During the break, the court reporter marked
 21 as Exhibit No. 93 the document right there to your
 22 right.
 23 MR. WONG: And counsel, here's a copy for you
 24 as well.
 25 MR. PAK: Thanks.

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1 devices.
 2 Q And I think you answered this earlier, but
 3 your team did not look at the specifics of how Siemens
 4 implemented PTP when you started adding PTP commands
 5 to Cisco's industrial Ethernet devices; correct?
 6 A We didn't look at any other vendor's device
 7 at the time.
 8 Q Okay. Have you seen the IEEE PTP standard
 9 before?
 10 A "Before" meaning before today or before --
 11 Q Yes, before today.
 12 A Before today, yes.
 13 Q When was the first time that you saw the IEEE
 14 PTP standard?
 15 A That's when I was working on this industrial
 16 Ethernet switch development around 2008, I think.
 17 Q Was it your choice to add -- I'm sorry.
 18 Strike that.
 19 Was it your suggestion to add PTP
 20 functionality to the Cisco industrial Ethernet device?
 21 A It was some decision made, and I was the one
 22 implementing it.
 23 Q I see.
 24 So somebody else at Cisco made the decision
 25 to add PTP functionality to the Cisco industrial

1 MR. WONG: The document bears control numbers
 2 AristaNDCA00031733 to '32021.
 3 Q Ms. Liu, you can take your time to look at
 4 the document, but the question that I have for you is:
 5 Do you recognize this document marked as Exhibit 93?
 6 A Yes, I -- I think this is the one we used, as
 7 well as the standard.
 8 Q Okay. Can you read the title of the IEEE
 9 specification marked as Exhibit 93.
 10 A "IEEE standard for the precision clock
 11 synchronization protocol for network measurement and
 12 control systems."
 13 Q Okay. And the -- the -- I guess the number
 14 for the standard on the bottom right is IEEE
 15 standard 1588-2008.
 16 Do you see that?
 17 A Yes, uh-huh.
 18 Q And this is the PTP IEEE standard that we
 19 have been talking about in this deposition; correct?
 20 A Yes.
 21 Q Okay. So -- so the exhibit marked as 93 is
 22 the standard that you reviewed before you began coding
 23 the PTP functionality for the Cisco industrial
 24 Ethernet device; correct?
 25 A Yes.

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1 Q Okay. And did you read the entire standard
2 before you began working on the PTP functionality?

3 A Yeah, I believe I read the -- the entire --
4 or the majority part of it.

5 Q That's -- that's impressive.

6 How -- the standard is -- is several hundred
7 pages long.

8 But you read the whole thing -- you remember
9 reading the whole thing?

10 A Yes.

11 Q Did you consult with the standard marked as
12 Exhibit 93 while you were coding the PTP functionality
13 for Cisco's industrial Ethernet devices?

14 A Yes. All of the messages format, the field
15 definitions behaviors, are documented here.

16 Q Okay. So -- so every PTP functionality --
17 every aspect of PTP functionality that you implemented
18 in Cisco's industrial Ethernet devices are based on
19 the IEEE standard marked as Exhibit 93?

20 MR. PAK: Objection; mischaracterizes the
21 witness' testimony.

22 MR. WONG: Q. Correct?

23 MR. PAK: Assumes facts not in evidence.

24 THE WITNESS: There are multiple parts of it
25 for the implementation part. There is the protocol

1 message.

2 Q And those are specified in the IEEE PTP
3 standard; right?

4 A Yes.

5 Q And you followed those standards when
6 implementing the PTP functionality in Cisco's
7 industrial Ethernet products; right?

8 MR. PAK: Objection; vague.

9 THE WITNESS: For the messages, yes.

10 MR. WONG: Q. And for the field definitions
11 as well?

12 A The field definition -- if you mean the --
13 how wide the field is, which field needs to follow
14 which one, yes. But particularly on the name of the
15 field, that may not necessarily be the same as the
16 spec.

17 Q Okay. Did you have any role in developing
18 the PTP standard marked as Exhibit 93?

19 A You mean contributing to the standard itself?

20 Q Yes.

21 A No.

22 Q Did you contribute to the standard that
23 preceded the standard marked as Exhibit 93?

24 And I believe you called that PTP version 1.

25 A No.

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1 part, which are the messages, the state machine, the
2 field definitions. Those we base off the -- the spec.
3 There are the way we calculate the clock difference.
4 Those are not documented here. Those are what we
5 developed. And there's also the CLI command which we
6 came up with separately.

7 MR. WONG: Q. When you say "messages," what
8 do you mean by messages?

9 A So, the PTP protocol has -- if I recall, has
10 multiple set -- is a handshaking message. So the
11 format of the message, which one follows what, which
12 field is contained in which message, those are defined
13 in the spec.

14 Q Okay. And you followed those definitions
15 when you implemented the PTP functionality in Cisco's
16 industrial Ethernet devices; right?

17 A Yes, the format of the messages.

18 Q Okay. You also mentioned field definitions.

19 What do you mean by field definitions?

20 A Those are inside of the message itself.

21 Q Okay. What are fields?

22 A Like, header, checksum. There are time
23 stamps inside of the message, and how big -- how wide
24 the field is. So those -- those are the field
25 definitions which have specific meaning inside of the

1 Q Did you have any role in drafting the
2 document that is marked as Exhibit 93?

3 A No.

4 Q Do you know -- I think I know the answer --
5 but do you know if Mr. Bilstead had any role in
6 developing the standard marked as Exhibit 93?

7 A I don't know anything about that part.

8 Q Okay. And you don't know anything about
9 whether Mr. Watve had contributed to the standard
10 marked as Exhibit 93?

11 A I don't know that part, either.

12 Q Okay. Excuse me.

13 MR. WONG: Can we mark this one as 94.
14 (Document marked Exhibit 94
15 for identification.)

16 MR. WONG: Okay. The court reporter has
17 marked Exhibit 94, the document with control
18 Nos. CSI-CLI-00610555 to '610581.

19 Q Ms. Liu, take your time in looking at this
20 document, but my first question for you is whether you
21 recognize this document?

22 A I don't recognize this document.

23 Q Okay. Have you seen any version of this
24 document, to your knowledge?

25 A No, I don't recall seeing this document.

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<p>1 MR. WONG: Q. -- that PTP meant precision 2 time protocol? 3 MR. PAK: Same objections. 4 THE WITNESS: I don't think it's well known 5 in the entire networking industry. 6 MR. WONG: Okay. 7 Q Was there a subset of the networking industry 8 where PTP was known to refer to the PTP in Exhibit 93? 9 MR. PAK: Objection; vague; calls for 10 speculation; assumes facts not in evidence. 11 THE WITNESS: It's not as normal a term as IP 12 or MAC. The -- the term is still -- I think even for 13 people who are working on the Catalyst switches, it's 14 not a very well-known term. 15 MR. WONG: Okay. 16 Q But certainly, the IEEE standard marked as 17 Exhibit 93 defines the PTP acronym; correct? 18 A Yes. 19 Q And uses the PTP acronym -- 20 A Yes. 21 Q -- to describe precision time protocol; 22 correct? 23 A True. 24 Q And it uses that PTP acronym to describe the 25 PTP functionality that you implemented in Cisco's</p>	<p>1 lists the PTP -- which lists PTP as an acronym; 2 correct? 3 MR. PAK: Objection; vague. 4 THE WITNESS: I would say the meanings are 5 the same, that they mean precision time protocol. 6 MR. WONG: Q. Well, the -- the words are the 7 same, too; correct? 8 PTP in the command is the same three letters 9 that appear on page 8 of Exhibit 93; correct? 10 A It's the same acronym. 11 Q And they're referring to the same protocol; 12 correct? 13 A Yes. 14 Q Now, if you'll turn to page 4 of Exhibit 93. 15 A (Witness complies.) Okay. 16 Q You can take off the -- well -- 17 A This is -- 18 Q -- maybe you want to keep that together, 19 actually. 20 A Right. 21 Q On page 4 of Exhibit 93, there is a large 22 heading No. 3 entitled: 23 "Definitions, acronyms, and abbreviations." 24 Do you see that? 25 A Yes.</p>
Page 106	Page 108
<p>1 industrial Ethernet devices; right? 2 MR. PAK: Objection; assumes facts not in 3 evidence; mischaracterizes the witness' prior 4 testimony. 5 THE WITNESS: In this spec, yes. 6 MR. WONG: Q. Well, is PTP used in Cisco's 7 industrial Ethernet device in a different way than 8 what PTP means in Exhibit 93? 9 MR. PAK: Objection; vague. 10 MR. WONG: Let me rephrase the question. 11 Q In the five commands that you're associated 12 with in Exhibit 92 -- 13 A Right. 14 Q -- all of them use the acronym PTP; correct? 15 A Yes. 16 Q That PTP refers to the same PTP that is shown 17 on page 8 of Exhibit 93; right? 18 MR. PAK: Objection; vague. 19 THE WITNESS: I think when I chose the 20 command, yes, I used PTP to mean the same as precision 21 time protocol -- 22 MR. WONG: Right. 23 THE WITNESS: -- as in the spec. 24 MR. WONG: Q. As in the spec and, in fact, 25 as in -- as on page 8 of Exhibit 93, correct, which</p>	<p>1 Q And then subsection 3.1 says "Definitions." 2 Do you see that? 3 A Yes. 4 Q Definition 3.1.4 in the IEEE PTP 5 specification defines the term "clock." 6 Do you see that? 7 A Yes, uh-huh. 8 Q What is the definition of clock in the IEEE 9 standard? 10 A It's no participating in the precision time 11 protocol, PTP, that is capable of providing a 12 measurement of the passage of time since a defined 13 epoch. 14 Q And you have read these definitions before 15 you began developing the PTP functionality in Cisco's 16 industrial Ethernet devices; right? 17 A Yes. 18 Q So you were familiar with these IEEE defined 19 terms before you began working on the PTP 20 functionality; correct? 21 A Yes. 22 Q And you knew they were in the IEEE standard; 23 correct? 24 A Yes. 25 Q Okay. Now, the definition of clock that you</p>

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1 read, is that your understanding of what a clock is in
2 the context of PTP?

3 MR. PAK: Objection; vague.

4 THE WITNESS: So, in the context of PTP
5 standard or spec, yes, a clock means this.

6 MR. WONG: Q. A clock means what it says on
7 page 4 of --

8 A Yes.

9 Q -- Exhibit 93?

10 A Right.

11 Q And you -- you -- you did not come up with
12 the term clock in the context of PTP; correct?

13 A No.

14 Q All right.

15 Clock is just a defined term in the IEEE
16 standard marked as Exhibit 93; correct?

17 A Yes.

18 Q Okay. If you'll look at page 6 of
19 Exhibit 93.

20 A (Witness complies.) Right.

21 Q Term 3.1.23; do you see that?

22 It defines the term "parent clock" correct?

23 A Yes.

24 Q What's the definition of parent clock?

25 A The master clock to which a clock is

1 Q If you'd turn to page 53 of Exhibit 93. Let
2 me know when you're there.

3 A 53?

4 Q The ending control number for that is '31805.

5 A (Witness complies.) Yeah, I found it.

6 Q Okay. If you look above -- so, near the
7 bottom of the page, you see in bold:

8 "7.6.2 PTP Device Attributes."

9 Do you see that?

10 A Yes.

11 Q Okay. Right above that, there are -- there
12 are two sort of indented bullet points, I guess, or
13 dashes.

14 Do you see that?

15 A (Witness nods head.)

16 Q And then, right above that is a sentence that
17 begins with the words "ordinary and boundary clocks."

18 Do you see that?

19 A Ordinary and boundary clocks.

20 Q Yep.

21 A Okay.

22 Q So that full sentence says:

23 "Ordinary and boundary clocks may keep
24 statistics on the performance of their parents using
25 the following attributes."

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1 synchronized.

2 Q And is that your understanding of what a
3 parent clock is in the context of PTP?

4 A It is.

5 Q And you get that understanding from the IEEE
6 standard marked as Exhibit 93; correct?

7 A Yes.

8 Q All right.

9 You don't disagree with that definition;
10 correct?

11 A No.

12 Q And you don't disagree with the definition of
13 clock in the IEEE PTP standard; right?

14 A No, I don't.

15 Q Okay. Now, the term parent also refers to
16 the parent clock in a PTP context; correct?

17 A The term parent --

18 MR. PAK: Objection; vague.

19 THE WITNESS: -- in this document --

20 MR. WONG: Yes.

21 THE WITNESS: -- whenever -- yeah, a parent
22 clock is used, it means the definition here.

23 MR. WONG: Sure.

24 THE WITNESS: Is that the question?

25 MR. WONG: Sure.

1 Do you see that?

2 A I haven't found that sentence.

3 Oh, yeah, found it.

4 Q Okay. That sentence in the IEEE standard
5 uses the term parents; do you see that?

6 A Yes.

7 Q Is it your understanding that -- that that
8 parents term refers to a parent clock?

9 MR. PAK: If you need to take some time to
10 look at the document more closely, you can do that.

11 THE WITNESS: Yes.

12 MR. PAK: Okay.

13 THE WITNESS: I think it -- it's referring to
14 the parent clock.

15 MR. WONG: Right.

16 Q There's no ambiguity in the context of the
17 IEEE standard that parent refers to parent clock;
18 right?

19 A Yes. Here, it means -- yeah, it does mean
20 parent clock.

21 Q Okay. So, in the context of the PTP
22 standard, referring to the parent of a clock is
23 referring to the defined term parent clock that we
24 discussed a few minutes ago; correct?

25 A Yes.

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1 Q Okay. Now, if you look on that same page,
2 underneath the heading "PTP Device Attributes," you
3 see the term "Priority 1"?

4 A Yes.

5 Q What is a PTP device attribute?

6 A It's certain characteristics of a PTP clock.

7 Q That are defined by the IEEE standard;
8 correct?

9 A Yes, uh-huh.

10 Q Okay. And these are device attributes that
11 are mandatory to be supported to comply with the PTP
12 standard; correct?

13 MR. PAK: Objection; calls for expert
14 testimony.

15 MR. WONG: Q. If you know.

16 A I didn't see anything as mandatory here.

17 Q Okay. If you read the description of
18 priority 1, it says:

19 "The attribute priority 1 is used in the
20 execution of the best master clock algorithm; see
21 9.3.2. Lower values take precedence. The
22 initialization value of priority 1 is specified in a
23 PTP profile. The value of priority 1 shall be
24 configurable to any value in the range 0 to 255,
25 unless restricted by limits established by an

1 Exhibit 93.

2 A (Witness complies.) Okay.

3 Q And you see right in the middle of the page,
4 it says "word usage"; correct?

5 A Uh-huh, I see.

6 Q And it defines "shall" in 4.2.1.

7 Do you see that?

8 A Yes.

9 Q And this is -- and you -- you read the entire
10 standard before you implemented any of the
11 functionality with Cisco's products; right?

12 A Yes.

13 Q The definition of "shall" -- well, why don't
14 you please read the definition of "shall."

15 A "The word 'shall,' which is equivalent to 'is
16 required to,' is used to indicate mandatory
17 requirements strictly to be followed in order to
18 conform to the standard and from which no deviation is
19 permitted."

20 Q Okay. And you understood that when you read
21 the standard; correct?

22 A Yes.

23 Q Okay. If you'd turn back to page 53 that we
24 were just on.

25 A (Witness complies.) Right.

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1 applicable PTP protocol" -- I'm sorry -- "PTP
2 profile."

3 Did I read that correctly?

4 A Yes.

5 Q Okay. Now, the -- the definition says the
6 value of priority 1 shall be configurable.

7 Do you see that?

8 A Yes.

9 Q "Shall" is a mandatory term in the IEEE
10 standard; correct?

11 MR. PAK: Same objection; calls for expert
12 testimony.

13 THE WITNESS: Would you please rephrase that
14 question.

15 MR. WONG: Sure.

16 Q "Shall" is a mandatory term -- strike that.

17 "Shall" indicates a mandatory requirement in
18 the IEEE standard; correct?

19 MR. PAK: Objection; calls for expert
20 testimony.

21 MR. WONG: Q. And it may help --

22 A I can say only my understanding, that it's
23 recommending that priority 1 is an attribute, that
24 this is a configurable value.

25 Q If you'd turn to page 9 of the same document,

1 Q So, it is a -- it is a requirement to comply
2 with the standard for there to be a value of
3 priority 1 that is configurable as described here on
4 page 53; correct?

5 A Yes.

6 MR. PAK: Same -- and again same objection;
7 calls for expert testimony.

8 MR. WONG: Q. If you'd turn -- I'm sorry.

9 And -- and do you have any disagreements with
10 the description of priority 1 here on page 53?

11 A No.

12 Q Okay. If you'd turn to the next page in
13 Exhibit 93.

14 A (Witness complies.)

15 Q At the top, it has another attribute,
16 "priority 2."

17 Do you see that?

18 A Yes.

19 Q And the definition of priority 2 also has a
20 sentence that says:

21 "The value of priority 2 shall be
22 configurable to any value in the range 0 to 255,
23 unless restricted by limits established by an
24 applicable PTP profile."

25 Do you see that?

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1 A Uh-huh, yes.

2 Q So the value of priority 2 -- strike that.

3 So it's a requirement to comply with the PTP
4 standard for the value of priority 2 to be
5 configurable as described here on page 54; correct?

6 MR. PAK: Same objection; calls for expert
7 testimony.

8 THE WITNESS: Yes, it's a parameter.

9 MR. WONG: Right.

10 THE WITNESS: Right.

11 Q And that's your understanding, based upon the
12 standard's own definition of what "shall" means within
13 the document; correct?

14 A Yes.

15 Q Okay. And when you implemented the PTP
16 functionality in Cisco's devices, was it your
17 intention to comply with the standard -- with the IEEE
18 standard marked as Exhibit 93?

19 MR. PAK: Objection; vague.

20 THE WITNESS: Again, there were certain
21 multiple aspects of it; right?

22 MR. WONG: Q. But, with respect to the two
23 device attributes that we just discussed, was it your
24 intention to comply with the IEEE standard?

25 MR. PAK: Same objection; vague.

1 said, as required -- it's required to be
2 interoperable --

3 MR. WONG: Okay.

4 THE WITNESS: -- at the PlugFest.

5 MR. WONG: Q. So, to comply with the PTP
6 standard, there have to be configurable device
7 attributes called priority 1 and priority 2 as
8 described on pages 53 and 54 of Exhibit 93?

9 MR. PAK: Objection; calls for expert
10 testimony. Objection; vague.

11 THE WITNESS: My understanding is these two
12 parameters, which needs to be configurable.

13 MR. WONG: Okay.

14 Q To comply with the PTP standard?

15 A Yes.

16 Q Okay. If you'd turn to page 62 of that same
17 document, Exhibit 93. Let me know when you're there.

18 A (Witness complies.) Yes, I'm on page 63.

19 Q 62. I'm sorry.

20 A 62. (Witness complies.) Okay.

21 Q Okay. About two-thirds down on that page 62,
22 there is a subheading 7.7.2.3.

23 Do you see that?

24 A Yes.

25 Q And the text next to that is:

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1 THE WITNESS: I think we intended to make
2 these two parameters as configurable for PTP clock.
3 So, for that part, yes, the compliance is that we
4 shall make these as configurable values.

5 MR. WONG: Q. As required by the IEEE
6 standard marked as --

7 A Yes.

8 Q -- Exhibit 93; correct?

9 A Yes.

10 Q Is it possible to have vendor
11 interoperability for PTP if you don't comply with the
12 PTP standard?

13 MR. PAK: Objection; calls for expert
14 testimony; vague.

15 MR. WONG: Q. In your view?

16 MR. PAK: Same objections.

17 THE WITNESS: In my view, the basic external
18 behaviors needs to be consistent to be interoperable.

19 MR. WONG: Q. And are the device attributes
20 that we just discussed, priority 1 and priority 2, are
21 those part of those external behaviors that need to be
22 consistent in order to support interoperability?

23 MR. PAK: Same objection; vague.

24 THE WITNESS: I think the priority value
25 being configurable, changeable by users is -- as you

1 "Sync (multicast) message transmission
2 interval."

3 Do you see that?

4 A Yes.

5 Q Now, the sentence below that says:

6 "The port DS.log sync interval shall specify
7 the mean time interval between successive sync
8 messages, i.e., the sync interval, when transmitted as
9 multicast messages."

10 Do you see that?

11 A Yes.

12 Q Did I read that correctly?

13 A Yes.

14 Q So the -- and that sentence, by the way, uses
15 the word "shall" again; correct?

16 A Yes.

17 Q That indicates that this is a required -- a
18 requirement of the PTP standard; correct?

19 MR. PAK: Objection; calls for expert
20 testimony.

21 THE WITNESS: I -- my understanding is this
22 is to be supported to implement a PTP protocol.

23 MR. WONG: Q. And that understanding is
24 based upon the definition of "shall" provided on
25 page 9 of the standard; correct?

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<p>1 A Yes, uh-huh.</p> <p>2 Q That definition of "shall" says that no</p> <p>3 deviation is permitted; correct?</p> <p>4 If you need to look at page 9, you can</p> <p>5 confirm that.</p> <p>6 A Right. No deviation of the behavior, I</p> <p>7 guess.</p> <p>8 Q Okay.</p> <p>9 A Right.</p> <p>10 Q Is that your understanding?</p> <p>11 A Right.</p> <p>12 Q So turning -- so you're still on page 62.</p> <p>13 The IEEE standard uses the term "sync interval" to</p> <p>14 describe the mean time interval between successive</p> <p>15 sync messages; correct?</p> <p>16 A Sync interval as specified in the text here?</p> <p>17 Q Yes.</p> <p>18 A Right. Yes.</p> <p>19 Q So, do you agree that the IEEE standard</p> <p>20 marked as Exhibit 93 on page 62 defines the sync</p> <p>21 interval as the mean time interval between successive</p> <p>22 sync messages when transmitted as multicast messages?</p> <p>23 A Yes.</p> <p>24 Q Okay. Do you have any disagreements with</p> <p>25 that definition?</p>	<p>1 A Yes.</p> <p>2 Q And at the top of Exhibit 95, there is a</p> <p>3 "From" field on the e-mail.</p> <p>4 Do you see that?</p> <p>5 A Yes.</p> <p>6 Q And it says "Toni Liu."</p> <p>7 Do you see that?</p> <p>8 A Yes.</p> <p>9 Q That's you; correct?</p> <p>10 A Yes.</p> <p>11 Q Your e-mail address while at Cisco was</p> <p>12 liut@cisco.com; correct?</p> <p>13 A Yes.</p> <p>14 Q Now, was your e-mail address the same as it</p> <p>15 was -- in your second period at Cisco as it was at</p> <p>16 your first period at Cisco?</p> <p>17 A It's the same.</p> <p>18 Q It's the same?</p> <p>19 A Yes.</p> <p>20 Q Okay. And this was -- this e-mail, marked as</p> <p>21 Exhibit 95, was sent on June 25th, 2008; correct?</p> <p>22 A Yes.</p> <p>23 Q Okay. All right. Set that down for a</p> <p>24 moment.</p> <p>25 MR. WONG: Let's mark this one as Exhibit 96.</p>
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<p>1 A No.</p> <p>2 Q Okay. Is that your understanding of what a</p> <p>3 sync interval is in the context of PTP?</p> <p>4 A Yes.</p> <p>5 MR. PAK: Objection; calls for expert</p> <p>6 testimony.</p> <p>7 MR. WONG: I'm going to mark two exhibits</p> <p>8 right now. This one will be -- what number are we on?</p> <p>9 THE REPORTER: 95.</p> <p>10 MR. WONG: Okay. This one will be 95.</p> <p>11 (Document marked Exhibit 95</p> <p>12 for identification.)</p> <p>13 MR. WONG: 95. I'll do them one at a time.</p> <p>14 Okay.</p> <p>15 Q So the court reporter has marked as</p> <p>16 Exhibit 95 the document with control</p> <p>17 Nos. CSICLI00846643, and that's it.</p> <p>18 A Uh-huh.</p> <p>19 Q Ms. Liu, do you recognize this document?</p> <p>20 A Yes.</p> <p>21 Q Is this one of the documents that refreshed</p> <p>22 your recollection as to prior events?</p> <p>23 A Yes.</p> <p>24 Q Okay. At the top -- first of all, this is an</p> <p>25 e-mail; correct?</p>	<p>1 (Document marked Exhibit 96</p> <p>2 for identification.)</p> <p>3 MR. WONG: This is 96.</p> <p>4 Q The court reporter has marked as Exhibit 96 a</p> <p>5 document bearing control Nos. CSICLI00608739 to '740.</p> <p>6 Please take a moment to look at this document.</p> <p>7 A (Witness complies.) Okay.</p> <p>8 Q This is also an e-mail; correct?</p> <p>9 A Yes.</p> <p>10 Q At the very top, there's a "From" field for</p> <p>11 this e-mail.</p> <p>12 Do you see that?</p> <p>13 A Yes.</p> <p>14 Q It also says it's from liut@cisco.com, Toni</p> <p>15 Liu?</p> <p>16 A Yes.</p> <p>17 Q That's you; correct?</p> <p>18 A True.</p> <p>19 Q Do you have any doubt that you sent this</p> <p>20 e-mail marked as Exhibit 96?</p> <p>21 A I don't have any doubt I sent it.</p> <p>22 Q Okay. And the exhibit marked as Exhibit 95,</p> <p>23 do you have any doubt that you sent that e-mail?</p> <p>24 A No.</p> <p>25 Q Okay. Now, if you look at Exhibit 95 and</p>

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AFTERNOON SESSION

1:41 P.M.

THE VIDEOGRAPHER: We are back on the record.

It is 1:41.

MR. WONG: Q. So, Ms. Liu, before the lunch break, we talked about the five commands that are associated with you in Exhibit 92.

A Yes.

Q One of the commands is "PTP priority 1."

A Yes.

Q Do you see that?

A Uh-huh.

Q What is the function that the "PTP priority 1" command performs?

A It configures the priority 1 parameter for the PTP clock.

Q Okay. And when you say "for the PTP clock," you mean PTP as defined by the IEEE standard; right?

A Yes.

Q You're not talking about a different PTP that's separate from the IEEE standard; right?

A No.

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MR. WONG: Okay.

Q And you -- in describing the function performed by the "PTP priority 1" command, you testified that it configures the priority 1 parameter for the PTP clock; correct?

A Yes.

Q And the priority 1 parameter for the PTP clock, that's the same priority 1 parameter that we discussed in Exhibit 93; correct?

A When you say "parameter," I think they are a little different in the CLI and the spec.

Q How are they different?

A The -- in the spec, it's the attribute of the clock; right? When I say parameter, I mean the -- in the context of the CLI command is a parameter.

Q Oh, I see.

So -- so the word priority 1 in the "PTP priority 1" CLI command is a parameter of the command?

A Yes.

Q That's what you mean by --

A Right.

Q -- parameter?

A Right.

Q Okay. Now, does the priority 1 parameter in the CLI command "PTP priority 1," does that refer to

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Q Okay. And the PTP in the command "PTP priority 1" refers to the IEEE standard; correct?

MR. PAK: Objection; vague.

THE WITNESS: It refers to, yeah, PTP.

MR. WONG: Q. It refers to the IEEE PTP standard that we marked as Exhibit 93; correct?

A Yes.

Q Okay. And the use of the word PTP in all five of the commands that are associated with you in Exhibit 92, they all come from the IEEE standard marked as Exhibit 93; correct?

MR. PAK: Objection; vague; mischaracterizes the witness' testimony.

THE WITNESS: You mean the PTP --

MR. WONG: Q. Let me ask the question --

A -- word in the command?

Q Yes.

Let me ask a clean question.

The use of the word PTP in all five of the commands that are associated with you in Exhibit 92 --

A Right.

Q -- that word came from the PTP IEEE standard that was marked as Exhibit 93; correct?

MR. PAK: Same objections.

THE WITNESS: Yes, it means the same.

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the priority 1 attribute in the IEEE standard marked as Exhibit 93?

MR. PAK: Objection; vague.

THE WITNESS: Yes. I think I chose it for the intention to mean the priority 1 attribute of the clock.

MR. WONG: Q. And is your answer the same for the command "PTP priority 2"?

Is the priority 2 command parameter -- does that refer to the priority 2 attribute in the IEEE standard marked as Exhibit 93?

MR. PAK: Same objection.

THE WITNESS: It's referring to the same -- that attribute, yes.

MR. WONG: Q. That attribute in the IEEE standard?

A In the IEEE standard, yes.

Q Okay. And you knew about the priority 1 and priority 2 attributes in the IEEE standard before you started adding the "PTP priority 1" and "PTP priority 2" commands to the iOS software; correct?

A Yes, I read the spec.

Q And you were aware of those two particular attributes before you started adding the "PTP priority 1" and "PTP priority 2" commands to Cisco's

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1 routing software; right?
 2 A Yes.
 3 Q How long did it take you to come up with the
 4 "PTP priority 1" command?
 5 A I don't remember how long it took for me to
 6 come up with the list of CLI commands.
 7 Q Okay. I'm just asking about the -- the one
 8 command, "PTP priority 1."
 9 A Right.
 10 Q Did -- did that take you an hour to come up
 11 with that command?
 12 MR. PAK: Objection; vague.
 13 THE WITNESS: You mean just to decide on the
 14 syntax of the command?
 15 MR. WONG: On the two words in the command.
 16 That's right.
 17 Q How long did it take you to decide on the
 18 two words, "PTP priority 1," in that command?
 19 A I don't remember.
 20 Q Did it take you more than a day?
 21 MR. PAK: Objection; vague.
 22 THE WITNESS: Maybe not. I don't recall the
 23 details of -- of this level.
 24 MR. WONG: Okay.
 25 Q Do you --

1 today --
 2 Q Okay.
 3 A -- that I saw.
 4 Q So the --
 5 A Yeah.
 6 Q So the same e-mails that were marked as
 7 exhibits in today's deposition are the ones that
 8 refreshed your memory?
 9 A Right.
 10 Q Okay. How long did it take you to write
 11 the -- strike that.
 12 Did you write the implementing source code
 13 for the "PTP priority 1" command
 14 A I did write the source code for implementing
 15 this command.
 16 Q How long did it take you to write the source
 17 code for the "PTP priority 1" command?
 18 A I don't remember any time frame on this.
 19 It's -- it's been a while.
 20 Q Do you know if it took you longer to write
 21 the implementing source code for the "PTP priority 1"
 22 command than it took you to choose the two words "PTP
 23 priority 1"?
 24 MR. PAK: Objection; vague.
 25 THE WITNESS: I would think it took longer to

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1 A How long, yeah.
 2 Q Are you done with your answer?
 3 A Right.
 4 Yes, I'm done with my answer.
 5 Q Okay. Do you know if it took you just a few
 6 minutes?
 7 MR. PAK: Same objections.
 8 THE WITNESS: I don't recall the details of
 9 how long it took.
 10 MR. WONG: Okay.
 11 Q So, you don't know whether it took you a few
 12 minutes or more than a day to decide upon the
 13 two words "PTP priority 1"; is that correct?
 14 A I don't recall the details on that.
 15 Q Okay. And are -- are there any documents
 16 that would refresh your memory of how long it took you
 17 to come up with the "PTP priority 1" command?
 18 A I don't see anything in the conversation
 19 here. So the e-mail here was after I came up with the
 20 command.
 21 Q Okay. Were there any other e-mails that you
 22 reviewed in preparation for this deposition that
 23 refreshed your recollection about the five commands
 24 that are associated with you?
 25 A It's the same e-mail that you give me

1 implement it.
 2 MR. WONG: Q. Would your answer be the same
 3 for the other four commands that are associated with
 4 you in Exhibit 92?
 5 A I know I gave some thought on these commands
 6 when I came up with them. But particular to how long
 7 it took for me to do any of these, that's the part I
 8 don't remember anymore.
 9 But I did remember it's among all of the
 10 attributes of -- or things mentioned in the spec, I
 11 chose a particular subset of things which I think I
 12 should provide a CLI command for user to configure
 13 them.
 14 So that's the -- that's -- I think it's part
 15 of the decision-making, and that could have taken some
 16 time. But how long I took, that's the part I don't
 17 remember now.
 18 Q Okay. And my question was more about your
 19 testimony about the "PTP priority 1" command, where
 20 you said it took longer to write the implementing code
 21 for that command than it did to choose the two words
 22 in the command.
 23 Do you -- do --
 24 A I --
 25 Q -- do you remember testifying to that effect?

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1 A Yes. I -- I agree --
 2 Q Okay.
 3 A -- that's likely true.
 4 Q So that's likely true for the other four
 5 commands as well?
 6 MR. PAK: Objection; vague.
 7 THE WITNESS: That's -- yeah, I can always
 8 say that's likely true.
 9 MR. WONG: Okay.
 10 Q And you say "it's likely true" just based
 11 upon your experience programming?
 12 A It's -- yeah, it's just based on my
 13 experience working with CLI commands.
 14 Q What type of programming is required to
 15 implement a command like "PTP priority 1"?
 16 A It's a C programming that we were using. So
 17 for the -- in general, you do the front end of
 18 interface, so you come up with the command. But then
 19 you -- then you spend time implementing hooking it up
 20 to the back-end code.
 21 Q Excuse me.
 22 And when you say "back-end code," is that the
 23 same thing as the implementing source code?
 24 That's the term that I was using.
 25 Is that the same thing, in your

1 Q Okay. What function does the "PTP sync
 2 interval" command perform?
 3 A It configures how often the clock syncs with
 4 the master.
 5 Q And do you recall earlier we were looking at
 6 the IEEE standard marked Exhibit 93 and a term called
 7 sync interval in there?
 8 A Right.
 9 Q Is the sync interval, that the "PTP sync
 10 interval" command refers to, the same sync interval
 11 that we discussed in Exhibit 93?
 12 MR. PAK: Objection; vague.
 13 THE WITNESS: I think that was -- this
 14 command was used -- was defined to be used to
 15 configure that part of the clock.
 16 MR. WONG: Right.
 17 Q And by "that part of the clock," you mean the
 18 sync interval attribute defined by the IEEE PTP
 19 standard; right?
 20 A Yes.
 21 Q Now, you chose the term priority 1 because
 22 priority 1 is an attribute that's in the IEEE
 23 standard; right?
 24 MR. PAK: Objection; vague.
 25 THE WITNESS: You mean when I wrote the

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1 understanding?
 2 A Yes.
 3 There -- so, when the CLI command is
 4 received, something needs to happen based on what has
 5 been configured as being specified as the parameter.
 6 So that's the interface I was referring to, that I
 7 hook up to the back-end behavior of the clock.
 8 Q And the back-end behavior for each command
 9 that you are associated with in Exhibit 92, did you
 10 write that source code?
 11 A I did write the source code.
 12 Q Did you have anyone else's help in writing
 13 the source code for those five commands associated
 14 with you in Exhibit 92?
 15 A No. I wrote all of them.
 16 Q The "PTP sync interval" command --
 17 A Yes.
 18 Q Well, actually, just for clarity, what
 19 function does the "PTP priority 2" command perform?
 20 A It configures another parameter which helps
 21 to determine the -- the clock.
 22 Q And that other parameter you're talking about
 23 is the priority 2 attribute that is defined by the
 24 IEEE standard marked as Exhibit 93; correct?
 25 A Yes.

1 command?
 2 MR. WONG: Q. When you --
 3 A When I -- when I chose to use priority 1;
 4 right?
 5 Q Yes, that's what I'm asking.
 6 A Yes. When I chose the word, I meant to
 7 configure this attribute for the clock. That was
 8 true.
 9 Q And this attribute for the clock, you're
 10 referring to the priority 1 attribute that's defined
 11 in the IEEE standard; right?
 12 A Yes.
 13 Q And your answer is the same for the
 14 priority 2 attribute defined in the IEEE standard,
 15 correct, with respect to the PTP priority 2 command?
 16 A Yes.
 17 Q And you chose the words sync interval because
 18 the IEEE standard marked as Exhibit 93 described --
 19 strike that.
 20 You chose the words sync interval because the
 21 IEEE standard marked as Exhibit 93 also used the term
 22 sync interval; correct?
 23 MR. PAK: Objection; vague.
 24 THE WITNESS: When you say that, it makes me
 25 feel that you -- it's a direct translate from the spec

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1 Q You were aware that the terms priority 1,
2 priority 2, sync interval, and PTP were defined in the
3 IEEE specification marked as Exhibit 93 before you
4 added those three commands to Cisco's routing
5 software; correct?

6 A I'm aware of those terms being defined in the
7 1588 standard.

8 Q Okay. Before you added those three commands
9 to the Cisco software; correct?

10 A Yes.

11 Q Okay. Now, "show PTP clock" is another
12 command that you're associated with; correct?

13 A Yes.

14 Q What's the function performed by the "show
15 PTP clock" command?

16 A It shows the state and status of the clock.
17 And I don't recall the entire output from the command,
18 but I think that's probably summarize majority of the
19 output.

20 Q Okay. And as we discussed earlier in today's
21 deposition, the PTP IEEE specification defines the
22 term clock; correct?

23 A It defined the term clock, yes.

24 Q Okay. And the clock that is referred to in
25 the command "show PTP clock" is the clock that is

1 A "Show" is a --

2 Q Sorry.

3 A -- big category of commands. Like, there is
4 debug. There is config. There is show. So show is
5 one big category of commands.

6 Q And there was a big -- and that category of
7 commands, the show commands, existed before you added
8 the "show PTP clock" command to the software; correct?

9 A Yes.

10 Q And you were just building upon that category
11 of commands when you used the word "show" in "show PTP
12 clock"; correct?

13 MR. PAK: Objection; mischaracterizes the
14 witness' testimony.

15 THE WITNESS: Yes, I think that -- that was
16 the intention.

17 MR. WONG: Q. And is the same
18 explanation -- does the same explanation apply to
19 "show PTP parent" for the show aspect of that command?

20 A Yes, for the show aspect of the command, yes.

21 Q Okay. What function does the "show PTP
22 parent" command perform?

23 A It shows the status of the parent clock.

24 Q When you say "the parent clock," are you
25 referring to the parent clock as defined in the PTP

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1 defined in the PTP standard; correct?

2 MR. PAK: Objection; vague.

3 THE WITNESS: Well, the command shows the PTP
4 clock status.

5 MR. WONG: Q. And when you refer to "the PTP
6 clock" in that response you just gave, you're
7 referring to the clock that is defined in the PTP
8 standard; correct?

9 A Yes, it means the clock.

10 Q Now, the -- the word "show" in that command,
11 were there other commands in iOS that used the word
12 "show" before you added this "show PTP clock" command
13 to the software?

14 A Yes.

15 Q Okay. You were familiar that other commands
16 used the first word of "show" to display information
17 before you added the "show PTP clock" command;
18 correct?

19 A Yes.

20 Q Okay. So you -- you simply followed what
21 other commands were doing when you chose the word
22 "show" in "show PTP clock"; is that right?

23 MR. PAK: Objection; assumes facts not in
24 evidence; mischaracterizes the witness' testimony.

25 MR. WONG: Q. If anything that I'm saying --

1 standards?

2 A Yes.

3 Q And you recall discussing the definition of
4 parent clock in the standards earlier in this
5 deposition; correct?

6 A Yes.

7 Q And another shorthand used by the IEEE
8 standard for parent clock is simply parent; correct?

9 MR. PAK: Objection; vague.

10 THE WITNESS: Can you refer me to that page.

11 MR. WONG: Sure, sure, absolutely.

12 Q I think it's on page 53 of Exhibit 93. It's
13 in that sentence maybe two-thirds of the way down on
14 page 53 that starts with:

15 "Ordinary and boundary clocks may keep
16 statistics."

17 A Uh-huh.

18 "Using the following attribute."

19 Okay.

20 Q So you would agree that, in the IEEE
21 standard, it uses the term parent as shorthand for
22 parent clock?

23 A Yes.

24 Q Okay. Do you know if commands that use the
25 word "show" were used before they were used in Cisco's

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(WHEREUPON, the deposition ended
at 3:36 p.m.)

---oOo---

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CERTIFICATE OF REPORTER

I, ANDREA M. IGNACIO, hereby certify that the
witness in the foregoing deposition was by me duly
sworn to tell the truth, the whole truth, and nothing
but the truth in the within-entitled cause;

That said deposition was taken in shorthand
by me, a disinterested person, at the time and place
therein stated, and that the testimony of the said
witness was thereafter reduced to typewriting, by
computer, under my direction and supervision;

That before completion of the deposition,
review of the transcript [x] was [] was not
requested. If requested, any changes made by the
deponent (and provided to the reporter) during the
period allowed are appended hereto.

I further certify that I am not of counsel or
attorney for either or any of the parties to the said
deposition, nor in any way interested in the event of
this cause, and that I am not related to any of the
parties thereto.

Dated: 01/29/2016

<%signature%>

ANDREA M. IGNACIO,
RPR, CRR, CRRR, CLR, CSR No. 9830

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JURAT

I, TONG LIU, do hereby certify under penalty
of perjury, that I have read the foregoing
transcript of my deposition in the matter of
Cisco Systems, Inc., vs. Arista Networks, Inc.,
taken on January 15, 2016; that I have made such
corrections as appear noted herein in ink,
initialed by me; that my testimony as contained
herein, as corrected, is true and correct.

DATED this ____ day of _____,
2015, at _____.

SIGNATURE OF WITNESS

NOTARIZATION (If Required)

State of _____

County of _____

Subscribed and sworn to (or affirmed) before me on
this ____ day of _____, 20____,

by _____, proved to me on the
basis of satisfactory evidence to be the person who
appeared before me.

Signature: _____ (Seal)

Page 1

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

CISCO SYSTEMS, INC.,)
)
Plaintiff,)
) Case No.
vs.) 5:14-cv-05344-BLF (PSG)
)
ARISTA NETWORKS, INC.,)
)
Defendant.)
_____)

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

VIDEOTAPED DEPOSITION OF KIRK LOUGHEED
Palo Alto, California
Friday, November 20, 2015
Volume I

Reported by:
CARLA SOARES
CSR No. 5908
Job No. 2187110
Pages 1 - 189

<p>1 UNITED STATES DISTRICT COURT 2 NORTHERN DISTRICT OF CALIFORNIA 3 SAN JOSE DIVISION 4 5 CISCO SYSTEMS, INC.,) 6) 7 Plaintiff,) 8) Case No. 9 vs.) 5:14-cv-05344-BLF (PSG) 10) 11 ARISTA NETWORKS, INC.,) 12) 13 Defendant.) 14) 15) 16) 17) 18) 19) 20) 21) 22) 23) 24) 25)</p> <p>VIDEOTAPED DEPOSITION OF KIRK LOUGHEED, Volume I, taken on behalf of Defendant, at 650 Page Mill Road, Palo Alto, California, beginning at 9:19 a.m., and ending at 6:15 p.m., on Friday, November 20, 2015, before CARLA SOARES, Certified Shorthand Reporter No. 5908.</p> <p>Page 2</p>	<p>1 APPEARANCES (Continued): 2 3 For the Defendant: 4 KEKER & VAN NEST LLP 5 BY: BRIAN L. FERRALL, Attorney at Law 6 BY: RYAN WONG, Attorney at Law 7 633 Battery Street 8 San Francisco, California 94111 9 415.391.5400 10 bferrall@kvn.com 11 rwong@kvn.com 12 13 ALSO PRESENT: Sean Grant, Video Operator 14 --o0o-- 15 16 17 18 19 20 21 22 23 24 25</p> <p>Page 4</p>
<p>1 APPEARANCES: 2 3 For the Plaintiff and the Witness: 4 QUINN EMANUEL URQUHART & SULLIVAN, LLP 5 BY: JOHN (JAY) NEUKOM, Attorney at Law 6 50 California Street, 22nd Floor 7 San Francisco, California 94111 8 415.875.6341 9 johnneukom@quinnemanuel.com 10 and 11 KIRKLAND & ELLIS LLP 12 BY: JOSHUA L. SIMMONS, Attorney at Law 13 601 Lexington Avenue 14 New York, New York 10022 15 212-446-4989 16 joshua.simmons@kirkland.com 17 18 19 20 21 22 23 24 25</p> <p>Page 3</p>	<p>1 INDEX 2 WITNESS 3 KIRK LOUGHEED EXAMINATION 4 Volume I 5 BY MR. FERRALL 10 6 7 EXHIBITS 8 NUMBER DESCRIPTION PAGE 9 Exhibit 29 Document headed "Internet 73 10 Protocol," 11 Bates ARISTANDCA0031553 - 1601 12 13 Exhibit 30 Document headed "DoD Internet 73 14 Host Table Specification" 15 16 Exhibit 31 Document headed "An Ethernet 73 17 Address Resolution Protocol or 18 Converting Network Protocol 19 Addresses to 48.bit Ethernet 20 Address for Transmission on 21 Ethernet Hardware," 22 Bates ARISTANDCA0003130 - 1639 23 24 25</p> <p>Page 5</p>

1	EXHIBITS		1	EXHIBITS	
2	NUMBER DESCRIPTION PAGE		2	NUMBER DESCRIPTION PAGE	
3	Exhibit 32 Document headed "Address	85	3	Exhibit 43 Document entitled "DECbrouter 90	18
4	Resolution Protocol (ARP) module		4	Products," Bates CSI-ANI-00081683 -	
5	for the Yeager gateway"		5	1683.000344	
6			6		
7	Exhibit 33 Email string, top email to Kirk	89	7	--o0o--	
8	Lougheed and Paula Labloner from		8		
9	Mike Sanchez, dated 11-17-14,		9		
10	Bates CSI-CLI-01326834 - 6837		10		
11			11		
12	Exhibit 34 Email string, top email to Phillip	93	12		
13	Remaker from Kirk Lougheed, dated		13		
14	3-30-10, Bates CSI-CLI-01317865 -		14		
15	7866		15		
16			16		
17	Exhibit 35 Email string, top email to Joe	100	17		
18	Hielscher from Kirk Lougheed,		18		
19	dated 7-23-08,		19		
20	Bates CSI-CLI-01134849 - 4850		20		
21			21		
22	Exhibit 36 Document entitled "Stanford	101	22		
23	Ethertip/Gateway User and		23		
24	Configuration Guide,"		24		
25	Bates CSI-CLI-01315523 - 5568		25		
	Page 6			Page 8	
1	EXHIBITS		1	Palo Alto, California	08:37:04
2	NUMBER DESCRIPTION PAGE		2	Friday, November 20, 2015	
3	Exhibit 37 Document entitled "cisco Systems	106	3	9:19 a.m.	
4	AGS User Manual,"		4		
5	Bates CSI-CLI-00358166 - 8223		5	PROCEEDINGS	08:37:10
6			6	THE VIDEO OPERATOR: Good morning. We're	
7	Exhibit 38 Email string, top email to Phillip	122	7	on the record. The time is 9:19 a.m., and the date	
8	Remaker from Kirk Lougheed, dated		8	is November 20th, 2015. This begins the videotaped	
9	12-11-08, Bates CSI-ANI-00043306 -		9	deposition of Kirk Lougheed.	
10	3306.000001		10	My name is Sean Grant, here with our court	09:19:25
11			11	reporter, Carla Soares. We're here from Veritext	
12	Exhibit 39 Document entitled "Cisco's	152	12	Legal Solutions at the request of counsel for	
13	Response to Arista's Interrogatory		13	defendant.	
14	No. 16 Amended Exhibit D1 (IOS		14	This deposition is being held at Wilson	
15	Release 11.0)"		15	Sonsini in Palo Alto, California. The caption of	09:19:34
16			16	this case is Cisco Systems, Inc., versus Arista	
17	Exhibit 40 Email to Craig Fox from Kirk	160	17	Networks, Inc., Case No. 5:14-CV-05344-BLF.	
18	Lougheed, dated 3-6-96,		18	Please note that audio- and	
19	Bates CSI-CLI-00746398		19	video-recording will take place unless all parties	
20			20	have agreed to go off the record. Microphones are	09:19:54
21	Exhibit 41 Document described as source	162	21	sensitive and may pick up whispers, private	
22	code file		22	conversations, or cellular interference.	
23			23	At this time, will counsel please identify	
24	Exhibit 42 Document described as code	177	24	themselves and state whom they represent.	
25			25	MR. FERRALL: Brian Ferrall of Keker &	09:20:06
	Page 7			Page 9	

<p>1 right now. 12:58:39</p> <p>2 Mr. Loughheed, you have to understand,</p> <p>3 we've got a lot to cover today, and I need to --</p> <p>4 A And I'm also under oath, and I want to</p> <p>5 make sure my replies to your answers (sic) are 12:58:47</p> <p>6 correct.</p> <p>7 Q Okay. So I'm asking you -- you can put</p> <p>8 the document down, frankly.</p> <p>9 Do you ever recall reviewing an RFC for an</p> <p>10 address resolution protocol? 12:58:58</p> <p>11 A Yes, I do recall reviewing a document --</p> <p>12 it may have been an RFC -- on address resolution.</p> <p>13 Q Do you know who developed address</p> <p>14 resolution protocols?</p> <p>15 A I don't recall. 12:59:20</p> <p>16 Q Did you contribute to that field?</p> <p>17 A No.</p> <p>18 Q All right. Do you know David Plummer?</p> <p>19 A I have heard the name before but I don't</p> <p>20 know the person. 12:59:31</p> <p>21 Q How many IETF RFCs have you authored in</p> <p>22 whole or in part?</p> <p>23 A Two, maybe three.</p> <p>24 Q What were the subject or subjects of those</p> <p>25 RFCs? 13:00:07</p> <p style="text-align: right;">Page 78</p>	<p>1 calls for a conclusion. 13:03:06</p> <p>2 THE WITNESS: Documents whose name I do</p> <p>3 not recall.</p> <p>4 BY MR. FERRALL:</p> <p>5 Q Can you describe generally what they were? 13:03:16</p> <p>6 A They were documents that described a</p> <p>7 packet format and described an associated state</p> <p>8 machine.</p> <p>9 Q Is the address resolution protocol</p> <p>10 referred to simply by the acronym ARP? 13:03:59</p> <p>11 A There's a general concept of an address</p> <p>12 resolution protocol, and then there's one, possibly</p> <p>13 more, that are -- may be described in various</p> <p>14 documents from the IETF.</p> <p>15 Q When did you first hear -- have you ever 13:04:52</p> <p>16 heard the address resolution protocol abbreviated as</p> <p>17 ARP?</p> <p>18 A Yes.</p> <p>19 Q When did you first hear that abbreviation?</p> <p>20 A I don't recall -- I don't recall the 13:05:17</p> <p>21 precise time.</p> <p>22 Q Was it while you were still at Stanford?</p> <p>23 A It certainly could have been.</p> <p>24 Q Did you develop any features for the</p> <p>25 address resolution protocol yourself? 13:05:52</p> <p style="text-align: right;">Page 80</p>
<p>1 A They were all on the border gateway 13:00:09</p> <p>2 protocol.</p> <p>3 Q Has Cisco ever had any policies about</p> <p>4 their employees submitting RFCs to the IETF?</p> <p>5 A I'm not aware of any specific policies. 13:01:02</p> <p>6 Q Did the software that you worked on at</p> <p>7 Stanford, the routing and terminal server software</p> <p>8 we talked about, did that include an address</p> <p>9 resolution protocol?</p> <p>10 MR. NEUKOM: Objection to form. Vague. 13:02:09</p> <p>11 BY MR. FERRALL:</p> <p>12 Q I should say an address resolution</p> <p>13 protocol feature.</p> <p>14 MR. NEUKOM: Same objection.</p> <p>15 THE WITNESS: Yes. 13:02:23</p> <p>16 BY MR. FERRALL:</p> <p>17 Q And what were the sources of information</p> <p>18 for you in order to -- well, strike that.</p> <p>19 Did you write software for the address</p> <p>20 resolution protocol feature? 13:02:38</p> <p>21 A Yes.</p> <p>22 Q And what were the sources of information</p> <p>23 that you used to prepare that address resolution</p> <p>24 protocol feature?</p> <p>25 MR. NEUKOM: Objection to form. Vague. 13:02:58</p> <p style="text-align: right;">Page 79</p>	<p>1 MR. NEUKOM: Objection Vague 13:05:56</p> <p>2 THE WITNESS: I do not understand your</p> <p>3 question What do you mean, develop features for</p> <p>4 the address resolution protocol?</p> <p>5 BY MR. FERRALL: 13:06:12</p> <p>6 Q Fair enough. Let me ask it a different</p> <p>7 way.</p> <p>8 Did you contribute to any IETF RFC</p> <p>9 relating to the address resolution protocol?</p> <p>10 MR. NEUKOM: Objection Asked and 13:06:27</p> <p>11 answered</p> <p>12 THE WITNESS: No</p> <p>13 BY MR. FERRALL:</p> <p>14 Q Did you develop features at -- while at</p> <p>15 Cisco that relate to ARP, if you don't mind me using 13:06:44</p> <p>16 the acronym?</p> <p>17 A I don't understand the question</p> <p>18 Q Who is Glenn Truitt?</p> <p>19 A He's a -- at my time at Stanford, he was a</p> <p>20 graduate student 13:08:37</p> <p>21 Q Did you work with him while at Stanford?</p> <p>22 A Briefly</p> <p>23 Q In what capacity?</p> <p>24 A I recollect that he may have written a</p> <p>25 user guide to the software at the time, but that's 13:09:21</p> <p style="text-align: right;">Page 81</p>

<p>1 MR. FERRALL: Let's mark this as the next 15:26:35</p> <p>2 exhibit.</p> <p>3 (Exhibit 38 was marked for identification</p> <p>4 and is attached hereto.)</p> <p>5 BY MR. FERRALL: 15:26:37</p> <p>6 Q Exhibit 38 is a set of emails between you</p> <p>7 and Mr. Remaker, among others. It bears control</p> <p>8 numbers CSI-ANI-00043306.</p> <p>9 A Okay. I'd like to read this.</p> <p>10 Q First let me ask you the question so you 15:27:19</p> <p>11 know what to look for.</p> <p>12 A I will forget the question by the time I'm</p> <p>13 done reading this.</p> <p>14 Q Well, Mr. Loughheed, that's not the way it</p> <p>15 works, actually. I ask the question and you answer 15:27:28</p> <p>16 it.</p> <p>17 A Okay.</p> <p>18 Q If you can't answer it, then you tell me.</p> <p>19 My only question is, did you send the</p> <p>20 email that's at the top of Exhibit 38, the one at 15:27:38</p> <p>21 12-11-2008 at 10:14 p.m.?</p> <p>22 MR. NEUKOM: Mischaracterizes the document</p> <p>23 on its face.</p> <p>24 And I know that Mr. Ferrall would like you</p> <p>25 to feel comfortable to read the page-and-a-half 15:27:54</p> <p style="text-align: right;">Page 122</p>	<p>1 message indicates that you are looking at an error 15:29:49</p> <p>2 message. An ancient operating system called TOPS-20</p> <p>3 used such a convention and I adopted it."</p> <p>4 Do you see that?</p> <p>5 A Yeah, I do see that. 15:29:59</p> <p>6 Q Why did you adopt a TOPS-20 convention?</p> <p>7 A Of the possibilities that I had, that</p> <p>8 seemed -- that seemed a reasonable -- to me, it</p> <p>9 seemed like a reasonable way of doing things.</p> <p>10 Q Did you get permission from Digital 15:30:32</p> <p>11 Equipment Company to use that convention?</p> <p>12 MR. NEUKOM: Objection. Calls for a legal</p> <p>13 conclusion and misstates prior testimony.</p> <p>14 THE WITNESS: No, I did not seek</p> <p>15 permission. 15:30:55</p> <p>16 BY MR. FERRALL:</p> <p>17 Q Have you ever heard of the acronym RIP in</p> <p>18 the context of networking?</p> <p>19 A It typically means routing information</p> <p>20 protocol. 15:31:18</p> <p>21 Q You're familiar with that protocol?</p> <p>22 A It's been a while, but yes, I'm familiar</p> <p>23 with it.</p> <p>24 Q Did you make up the acronym RIP for</p> <p>25 routing information protocol? 15:31:32</p> <p style="text-align: right;">Page 124</p>
<p>1 document that he's just put in front of you before 15:27:57</p> <p>2 answering his question.</p> <p>3 THE WITNESS: Okay. I'll read it.</p> <p>4 MR. FERRALL: Actually, no, I would like</p> <p>5 him to answer the question. 15:28:03</p> <p>6 Q Are you telling me you can't tell me</p> <p>7 whether you sent the email?</p> <p>8 MR. NEUKOM: It's a totally unfair</p> <p>9 question. The email that he sent would necessarily</p> <p>10 include everything that follows. 15:28:10</p> <p>11 If you want him to tell you whether he</p> <p>12 remembers this or whether he sent it, let him read</p> <p>13 the document. Come on, Brian.</p> <p>14 It's a page and a half. We're not talking</p> <p>15 about him wasting 30 minutes to read a product 15:28:20</p> <p>16 manual. It's a page-and-a-half email. The witness</p> <p>17 has said he wants to read it, and we're going to let</p> <p>18 him read it.</p> <p>19 THE WITNESS: Okay. I've read it.</p> <p>20 BY MR. FERRALL: 15:29:28</p> <p>21 Q Okay. Did you send this email that's</p> <p>22 dated December 11, 2008, at 10:14 p.m.?</p> <p>23 A I believe I did.</p> <p>24 Q Okay. And in the last paragraph of that</p> <p>25 email, you write, "The percent sign leading a 15:29:41</p> <p style="text-align: right;">Page 123</p>	<p>1 A No, I did not make up that acronym. 15:31:37</p> <p>2 Q Did you make up the term "routing</p> <p>3 information protocol"?</p> <p>4 A No.</p> <p>5 Q Did you submit an RFC for the routing 15:31:51</p> <p>6 information protocol?</p> <p>7 A No.</p> <p>8 Q Do you know who did?</p> <p>9 A No, I don't know who did.</p> <p>10 Q Did you ever ask permission from the 15:32:25</p> <p>11 person who made up the term "RIP" for permission to</p> <p>12 use it, to use that term?</p> <p>13 MR. NEUKOM: Objection. Foundation,</p> <p>14 vague, and calls for a legal conclusion.</p> <p>15 THE WITNESS: There was no one whose 15:32:30</p> <p>16 permission one could ask.</p> <p>17 BY MR. FERRALL:</p> <p>18 Q Well, I'll tell you, a Mr. Charles Hedrick</p> <p>19 at Rutgers submitted what I believe to be the first</p> <p>20 RFC on the routing information protocol. 15:33:05</p> <p>21 Do you know Mr. Hedrick?</p> <p>22 A I do.</p> <p>23 Q Did you ever ask him for permission to use</p> <p>24 the term "RIP"?</p> <p>25 MR. NEUKOM: Objection. Asked and 15:33:15</p> <p style="text-align: right;">Page 125</p>

<p>1 answered. 15:33:15</p> <p>2 THE WITNESS: Mr. Hedrick formally</p> <p>3 documented an informal standard that was already in</p> <p>4 use in the industry for a number of years.</p> <p>5 BY MR. FERRALL: 15:33:27</p> <p>6 Q And what's the significance of that?</p> <p>7 MR. NEUKOM: Objection. Calls for</p> <p>8 speculation.</p> <p>9 THE WITNESS: It wouldn't have occurred to</p> <p>10 me to ask him for permission. 15:33:47</p> <p>11 BY MR. FERRALL:</p> <p>12 Q I think you testified earlier that you</p> <p>13 submitted several RFCs for the border gateway</p> <p>14 protocol, correct?</p> <p>15 A Correct. 15:34:07</p> <p>16 Q And your co-author on at least the first</p> <p>17 such RFC was a Mr. Yakov Rekhter, correct?</p> <p>18 A Correct.</p> <p>19 Q Was he your co-author on the subsequent</p> <p>20 submissions, too, do you know? 15:34:31</p> <p>21 A Certainly on the second one. I don't</p> <p>22 recall on the third one. And after that, there were</p> <p>23 other co-authors.</p> <p>24 Q And where does Mr. Rekhter or did</p> <p>25 Mr. Rekhter work at the time? 15:34:50</p> <p style="text-align: right;">Page 126</p>	<p>1 MR. NEUKOM: Objection. Compound, vague. 15:37:00</p> <p>2 THE WITNESS: -- we did not make any such</p> <p>3 assertions.</p> <p>4 MR. NEUKOM: And foundation.</p> <p>5 BY MR. FERRALL: 15:37:08</p> <p>6 Q Did you ever have an agreement with</p> <p>7 Mr. Rekhter about the right to use any of his</p> <p>8 contributions to the BGP work that you guys did?</p> <p>9 MR. NEUKOM: Vague, compound, calls for a</p> <p>10 legal conclusion -- 15:37:44</p> <p>11 THE WITNESS: Could you --</p> <p>12 MR. NEUKOM: -- and mischaracterizes prior</p> <p>13 testimony.</p> <p>14 THE WITNESS: Could you repeat the</p> <p>15 question, please? 15:37:59</p> <p>16 BY MR. FERRALL:</p> <p>17 Q Sure. I'll ask a slightly different</p> <p>18 question.</p> <p>19 Did you ever ask permission from</p> <p>20 Mr. Rekhter to use any of his contributions to the 15:38:09</p> <p>21 BGP project?</p> <p>22 MR. NEUKOM: Objection. Vague, compound,</p> <p>23 calls for a legal conclusion.</p> <p>24 THE WITNESS: We did not seek permission</p> <p>25 from one another for our individual contributions. 15:38:26</p> <p style="text-align: right;">Page 128</p>
<p>1 A He worked for IBM. 15:34:52</p> <p>2 Q What was Mr. Rekhter's contribution to the</p> <p>3 BGP RFC? The first one?</p> <p>4 A We were co-designers.</p> <p>5 Q Are you able to describe what he 15:35:28</p> <p>6 contributed as opposed to what you contributed?</p> <p>7 A No. We worked closely together.</p> <p>8 Q Do you know whether you ever made any</p> <p>9 declarations to the IETF concerning copyrights that</p> <p>10 Cisco claimed in any of the language in the first 15:35:57</p> <p>11 BGP RFC?</p> <p>12 MR. NEUKOM: Objection. Vague, compound.</p> <p>13 THE WITNESS: To the best of my</p> <p>14 recollection, we made no copyright claims in the</p> <p>15 first BGP RFC. 15:36:17</p> <p>16 BY MR. FERRALL:</p> <p>17 Q Did Cisco make any disclosures to the IETF</p> <p>18 regarding copyright claims in any of the BGP RFCs?</p> <p>19 MR. NEUKOM: Objection. Compound, vague.</p> <p>20 THE WITNESS: Not to my knowledge. 15:36:35</p> <p>21 BY MR. FERRALL:</p> <p>22 Q Did you ever make a disclosure to the</p> <p>23 Internet Architecture Board of any intellectual</p> <p>24 property rights in BGP, to your knowledge?</p> <p>25 A To my knowledge -- 15:36:57</p> <p style="text-align: right;">Page 127</p>	<p>1 BY MR. FERRALL: 15:38:30</p> <p>2 Q Okay. IBM didn't ask you for permission,</p> <p>3 either, correct?</p> <p>4 A No.</p> <p>5 Q One of the CLI terms in this case is the 15:39:20</p> <p>6 term "IP address."</p> <p>7 Are you familiar with that?</p> <p>8 A I'm familiar with the command expression</p> <p>9 "IP address."</p> <p>10 Q Did you come up with the phrase "IP 15:39:33</p> <p>11 address"?</p> <p>12 A When Cisco came out of Stanford, we were</p> <p>13 shipping an IP -- an Internet protocol only router.</p> <p>14 And there was a command "address" that took some</p> <p>15 arguments. 15:40:12</p> <p>16 And after -- after a while, we started</p> <p>17 adding other protocols to the software. The first</p> <p>18 one was "DECnet." And since "address" was already</p> <p>19 taken to refer to IP functionality, Internet</p> <p>20 protocol functionality, we came up with "DECnet</p> <p>21 address," and then had a DECnet address after it. 15:40:44</p> <p>22 That "DECnet address" command could have</p> <p>23 very well have said "address," and then DECnet</p> <p>24 addresses look different than IP addresses, and we</p> <p>25 could have had the software figure out which type of 15:41:11</p> <p style="text-align: right;">Page 129</p>

<p>1 address we were referring to. But we chose "DECnet 15:41:13</p> <p>2 address."</p> <p>3 It became clear that much more -- that we</p> <p>4 were becoming a multi-protocol router. We were</p> <p>5 adding other protocols into the box, into the 15:41:27</p> <p>6 software.</p> <p>7 And I had -- I value -- I value the</p> <p>8 aesthetic of having a symmetric-looking command line</p> <p>9 expression, symmetric hierarchy. It was clear we</p> <p>10 were heading towards a hierarchy. 15:41:52</p> <p>11 So at some point after DECnet and perhaps</p> <p>12 a few other protocols to make things look very</p> <p>13 similar, we started prefacing our IP-only commands</p> <p>14 with "IP." And that gave a very -- what I thought</p> <p>15 was a very elegant, symmetric, elegant way of 15:42:16</p> <p>16 referring to different protocols within a</p> <p>17 multi-protocol router.</p> <p>18 So that is the history of the "IP address"</p> <p>19 command.</p> <p>20 Q Okay. My question was simpler. I 15:42:36</p> <p>21 appreciate that answer. But my question was a</p> <p>22 little simpler than that, but let me ask it a</p> <p>23 different way.</p> <p>24 You had heard of the term "IP address"</p> <p>25 before you joined Cisco, hadn't you? 15:42:51</p> <p style="text-align: right;">Page 130</p>	<p>1 referring to? 15:44:36</p> <p>2 A That was the aesthetic choice I made.</p> <p>3 MR. NEUKOM: Objection. Mischaracterizes</p> <p>4 prior testimony.</p> <p>5 THE WITNESS: There were many possible 15:44:49</p> <p>6 ways of doing it. As I indicated, I could perhaps</p> <p>7 take a look at an address and then infer what it</p> <p>8 was. But that was not the choice that I made at the</p> <p>9 time.</p> <p>10 BY MR. FERRALL: 15:45:07</p> <p>11 Q What were the alternative commands that</p> <p>12 you considered for "IP host"?</p> <p>13 A "Name." "Name" was certainly one of the</p> <p>14 possible candidates. "Network system" or</p> <p>15 "system" -- there are many, many words that one 15:45:5</p> <p>16 could use to refer to all sorts of different things.</p> <p>17 Q Okay. But now you're talking about</p> <p>18 alternatives for the word "host," right?</p> <p>19 A Um-hum.</p> <p>20 Q Okay. You didn't -- you're not the first 15:46:08</p> <p>21 one to use the word "host," are you?</p> <p>22 A No.</p> <p>23 Q I mean, "host" had been used for -- well</p> <p>24 before you joined Cisco to refer to a computer host.</p> <p>25 It's a conventional term, right? 15:46:29</p> <p style="text-align: right;">Page 132</p>
<p>1 MR. NEUKOM: Objection. Vague and asked 15:42:59</p> <p>2 and answered.</p> <p>3 THE WITNESS: I suppose I had. When one</p> <p>4 is talking about different networking protocols, one</p> <p>5 needs to clarify which networking protocol one is 15:43:10</p> <p>6 talking about. So it was probably terminology that</p> <p>7 was in the air.</p> <p>8 BY MR. FERRALL:</p> <p>9 Q Does the same go for "IP host," also? You</p> <p>10 had heard that before you joined Cisco? 15:43:29</p> <p>11 MR. NEUKOM: Objection. Misstates prior</p> <p>12 testimony.</p> <p>13 THE WITNESS: The original form of the</p> <p>14 "host" command was just "host command." It was</p> <p>15 another one that had to distinguish, in a 15:43:41</p> <p>16 multi-protocol world, in a multi-protocol piece of</p> <p>17 software, what you were talking about.</p> <p>18 It would have looked very odd in a</p> <p>19 multi-protocol router that there was one protocol</p> <p>20 that wasn't prefaced by a -- some descriptive 15:44:03</p> <p>21 keyword.</p> <p>22 BY MR. FERRALL:</p> <p>23 Q Following up on that, the purpose of your</p> <p>24 use of "IP" as the first keyword in that command "IP</p> <p>25 host" was to distinguish the protocol that it's 15:44:33</p> <p style="text-align: right;">Page 131</p>	<p>1 MR. NEUKOM: Objection Vague, compound, 15:46:31</p> <p>2 foundation, and calls for opinion testimony</p> <p>3 THE WITNESS: It was one of the</p> <p>4 possibilities that I had -- that I had</p> <p>5 BY MR. FERRALL: 15:46:46</p> <p>6 Q And "host" was the term that was used in</p> <p>7 the commands in the software that came from</p> <p>8 Stanford; is that right?</p> <p>9 MR. NEUKOM: Objection Mischaracterizes</p> <p>10 prior testimony 15:47:13</p> <p>11 THE WITNESS: I had implemented the "host"</p> <p>12 command while I was at Stanford</p> <p>13 BY MR. FERRALL:</p> <p>14 Q Okay. And what did you -- so did you</p> <p>15 decide to use the word "host" for the command on the 15:47:27</p> <p>16 software you worked at while you were employed by</p> <p>17 Stanford?</p> <p>18 MR. NEUKOM: Objection Vague</p> <p>19 THE WITNESS: Could you restate that</p> <p>20 question? 15:47:50</p> <p>21 BY MR. FERRALL:</p> <p>22 Q Sure.</p> <p>23 For the software that -- strike that.</p> <p>24 For the gateway TIP software that you</p> <p>25 worked on while you were employed at Stanford, was 15:48:02</p> <p style="text-align: right;">Page 133</p>

<p>1 interface, and it would -- as a packet that was 16:12:12</p> <p>2 being sent -- sent out that interface, it could</p> <p>3 either be permitted or denied going through that</p> <p>4 interface.</p> <p>5 Those were the two original uses of the 16:12:29</p> <p>6 "access list" command expression.</p> <p>7 Q Do you believe that you coined the term</p> <p>8 "access list"?</p> <p>9 A It was my choice to use that description.</p> <p>10 Q Well, I'm asking you if you coined that 16:12:56</p> <p>11 term, or had you ever heard that term before in the</p> <p>12 context of networking?</p> <p>13 MR. NEUKOM: Objection. Vague, compound,</p> <p>14 asked and answered.</p> <p>15 THE WITNESS: I do not believe that I had 16:13:13</p> <p>16 heard the term before.</p> <p>17 BY MR. FERRALL:</p> <p>18 Q Had you heard the term "IP access group"</p> <p>19 before?</p> <p>20 A Yes. 16:13:25</p> <p>21 Q Who coined that term, to your knowledge,</p> <p>22 do you know?</p> <p>23 A I did.</p> <p>24 Q Under what circumstances? Or for what</p> <p>25 purpose, I should say? 16:13:39</p> <p style="text-align: right;">Page 142</p>	<p>1 the like, or "database lookup" or 16:16:59</p> <p>2 BY MR. FERRALL:</p> <p>3 Q Did you coin the term "domain lookup"?</p> <p>4 A I decided to use that as a command</p> <p>5 expression within the software, yes 16:17:21</p> <p>6 Q I'll ask the question one more time. I'm</p> <p>7 asking you if you coined the term "domain lookup."</p> <p>8 MR. NEUKOM: Objection. Asked and</p> <p>9 answered and vague</p> <p>10 THE WITNESS: I did not 16:17:43</p> <p>11 BY MR. FERRALL:</p> <p>12 Q Do you know who did?</p> <p>13 A No idea</p> <p>14 Q When was -- to your knowledge, when was</p> <p>15 the term "routing" ever used in conjunction with the 16:18:41</p> <p>16 Internet protocol?</p> <p>17 MR. NEUKOM: Objection. Vague and</p> <p>18 foundation</p> <p>19 THE WITNESS: I don't know when the term</p> <p>20 "routing" was used 16:19:05</p> <p>21 BY MR. FERRALL:</p> <p>22 Q Were people in the field talking about</p> <p>23 routing in connection with IP before you joined</p> <p>24 Cisco?</p> <p>25 MR. NEUKOM: Objection. Vague, compound 16:19:24</p> <p style="text-align: right;">Page 144</p>
<p>1 A I don't remember the exact details, but it 16:13:52</p> <p>2 is -- either assigns an access list to an interface</p> <p>3 or -- I think it assigns an interface to a -- an</p> <p>4 access list to an interface. I believe it's access</p> <p>5 class or something like that that assigns it to an 16:14:07</p> <p>6 interface or to a line number.</p> <p>7 Q The term "domain name" is not a term that</p> <p>8 you made up, is it?</p> <p>9 A No, I didn't make -- I -- no, I did not.</p> <p>10 Q "Domain name" is a term that goes back to 16:15:38</p> <p>11 the ARPANET, actually. Are you aware of that?</p> <p>12 MR. NEUKOM: Objection. Foundation.</p> <p>13 THE WITNESS: I would be unsurprised if it</p> <p>14 went back that far.</p> <p>15 Are you referring to ARPANET protocols or 16:16:02</p> <p>16 ARPANET network?</p> <p>17 BY MR. FERRALL:</p> <p>18 Q The ARPANET network.</p> <p>19 A I believe the concept was introduced while</p> <p>20 the ARPANET network was still running. 16:16:15</p> <p>21 Q What about the words "domain lookup"? Did</p> <p>22 you coin that term "domain lookup"?</p> <p>23 MR. NEUKOM: Objection. Vague.</p> <p>24 THE WITNESS: It's a parallel construction</p> <p>25 to terms like "address lookup" or "host lookup" or 16:16:52</p> <p style="text-align: right;">Page 143</p>	<p>1 THE WITNESS: Yes 16:19:27</p> <p>2 BY MR. FERRALL:</p> <p>3 Q Tell me what, if anything, was creative</p> <p>4 about your decision to use the term "IP routing" as</p> <p>5 a CLI command. 16:19:51</p> <p>6 MR. NEUKOM: Objection. Calls for opinion</p> <p>7 testimony</p> <p>8 THE WITNESS: At Stanford where we had</p> <p>9 terminal servers and gateways in the same software,</p> <p>10 there were times when it was convenient -- just 16:20:26</p> <p>11 because something had multiple interfaces, it could</p> <p>12 still perhaps be a terminal server. So I needed a</p> <p>13 way of turning off, disabling routing functionality</p> <p>14 And I used the command -- I chose the</p> <p>15 keyword -- configuration keyword command expression 16:21:07</p> <p>16 "routing." Then "no routing" would turn off routing</p> <p>17 functionality in whatever software was running at</p> <p>18 the time despite its hardware configuration</p> <p>19 And then later on at Cisco, to keep the --</p> <p>20 keep the form of the hierarchy of commands, we added 16:21:35</p> <p>21 the -- we added our choice of -- we added "IP" in</p> <p>22 front of it because you could potentially turn off</p> <p>23 other sorts of routing, or at least that was the --</p> <p>24 that was the -- that was a possibility for other</p> <p>25 network protocols 16:22:02</p> <p style="text-align: right;">Page 145</p>

<p>1 BY MR. FERRALL: 17:55:19</p> <p>2 Q Mr. Lougheed, this is a document that</p> <p>3 appears to be your work, according to the copyright</p> <p>4 notice on the front.</p> <p>5 Do you see that? 17:55:29</p> <p>6 A Yes, I see that.</p> <p>7 Q Okay. Do you know when -- do you</p> <p>8 recognize it?</p> <p>9 A Yes, I do.</p> <p>10 Q What is it? 17:55:36</p> <p>11 A It's a file called "giobs.h." It is</p> <p>12 declaring a set of variables that are used in the</p> <p>13 software.</p> <p>14 Q And when did you compose what's</p> <p>15 Exhibit 42? 17:56:02</p> <p>16 A Is there a question?</p> <p>17 Q Yes. I asked when did you compose</p> <p>18 Exhibit 42?</p> <p>19 A Apparently June of 1985.</p> <p>20 Q And you were employed by Stanford at that 17:56:28</p> <p>21 time, right?</p> <p>22 A Correct.</p> <p>23 Q We had talked earlier about the ARP,</p> <p>24 address resolution protocol.</p> <p>25 Do you remember that? 17:56:57</p> <p style="text-align: right;">Page 178</p>	<p>1 interior routing protocols. And customer networks, 17:59:19</p> <p>2 especially in the early days when they were attached</p> <p>3 to the -- they had campus networks running one</p> <p>4 routing protocol, they'd be attached to the NSFNET</p> <p>5 backbone as well running a different routing 17:59:39</p> <p>6 protocol.</p> <p>7 And since routing protocols would give</p> <p>8 incommensurate metrics, metrics that could not be</p> <p>9 compared, I developed a concept of distance that</p> <p>10 says if one routing protocol says it knows a route 18:00:08</p> <p>11 to one destination and another routing protocol says</p> <p>12 it knows a route to that same destination, which --</p> <p>13 the routing protocol with the smallest</p> <p>14 administrative distance would be the one that would</p> <p>15 be entered into the routing table. 18:00:24</p> <p>16 And so that was the problem, and my</p> <p>17 solution was the administrative distance mechanism</p> <p>18 that I described.</p> <p>19 And when I implemented BGP, that was a</p> <p>20 natural extension to include for BGP as well to be 18:00:49</p> <p>21 able to configure an administrative distance to</p> <p>22 determine the believability of BGP.</p> <p>23 If no routing protocol -- if only one</p> <p>24 routing protocol knew the destination, you would</p> <p>25 believe that. If there are two or more, 18:01:10</p> <p style="text-align: right;">Page 180</p>
<p>1 A Yes. 17:56:58</p> <p>2 Q Okay.</p> <p>3 A I remember you asked questions about that.</p> <p>4 Q Are you familiar with there being a</p> <p>5 provision for time-outs in the ARP protocol? 17:57:15</p> <p>6 MR. NEUKOM: Objection. Vague and</p> <p>7 compound.</p> <p>8 THE WITNESS: There is the -- ARP entries</p> <p>9 can become stale. If you unplug the computer or you</p> <p>10 move the computer somewhere else or you replace the 17:57:43</p> <p>11 network interface, entries will become stale.</p> <p>12 Implementing a time-out is a way of making sure the</p> <p>13 cache isn't stale.</p> <p>14 BY MR. FERRALL:</p> <p>15 Q Are you aware of there being a provision 17:58:10</p> <p>16 for time-outs in the RFC for ARP?</p> <p>17 MR. NEUKOM: Objection. Vague and</p> <p>18 compound, asked and answered.</p> <p>19 THE WITNESS: I'm not -- I don't remember</p> <p>20 such language right now. 17:58:38</p> <p>21 BY MR. FERRALL:</p> <p>22 Q Did you create the term "distance BGP"?</p> <p>23 A Yes.</p> <p>24 Q How did you come up with that term?</p> <p>25 A The Cisco IOS started supporting multiple 17:59:11</p> <p style="text-align: right;">Page 179</p>	<p>1 administrative distance was the tie-breaker. 18:01:16</p> <p>2 Q Sorry. I'm going to jump back to ARP.</p> <p>3 There's a term you use associated with</p> <p>4 ARP, "ARP cache." We talked about that earlier in</p> <p>5 looking at one of the "clear" commands, right? 18:01:52</p> <p>6 Where did the term "ARP cache" come from?</p> <p>7 A The cache is a -- logically a list of</p> <p>8 items. An ARP cache would be a list of ARP requests</p> <p>9 that have been satisfied, including their MAC</p> <p>10 addresses and how long since the last time we'd seen 18:02:37</p> <p>11 a -- the router had seen an ARP request go by for</p> <p>12 that particular source address.</p> <p>13 That sort of computer science concept of a</p> <p>14 cache is found all over.</p> <p>15 Q One of the commands that is indicated that 18:03:14</p> <p>16 you authored is the command "boot system."</p> <p>17 Had you ever heard someone use the words</p> <p>18 "boot system" together before you joined Cisco?</p> <p>19 MR. NEUKOM: Objection. Vague.</p> <p>20 THE WITNESS: I had heard phrases like 18:03:45</p> <p>21 "boot the system up," "reboot the system," "reload</p> <p>22 the system," "start the system," "restart the</p> <p>23 system."</p> <p>24 (Exhibit 43 was marked for identification</p> <p>25 and is attached hereto.) 16:48:10</p> <p style="text-align: right;">Page 181</p>

Pages 178 to 181

1	Q How did you choose the term -- the words	18:13:39	1	
2	"timers basic" for this function?		2	
3	A I don't remember where "basic" came from.		3	
4	But using the keyword "timers" was my -- was my		4	
5	introduction, was my creation.	18:14:00	5	
6	MR. NEUKOM: Counsel, I believe we're now		6	
7	beyond seven hours.		7	
8	MR. FERRALL: Okay. Well, I -- given		8	I, KIRK LOUGHEED, do hereby declare under
9	Mr. Loughheed's tenure at Cisco, I thank him for his		9	penalty of perjury that I have read the foregoing
10	time, but I will say I think we deserve some more	18:14:22	10	transcript; that I have made any corrections as
11	time with him.		11	appear noted, in ink, initialed by me, or attached
12	But I understand seven hours is up and		12	hereto; that my testimony as contained herein, as
13	you're going to say enough is enough for today I		13	corrected, is true and correct.
14	take it; is that right?		14	EXECUTED this ____ day of _____,
15	MR. NEUKOM: Certainly for today for the	18:14:31	15	2015, at _____,
16	sake of the witness. And we will respectfully		16	(City) (State)
17	disagree with the idea that counsel needs more than		17	
18	seven hours --		18	
19	MR. FERRALL: Okay.		19	
20	MR. NEUKOM: -- needs more than today.	18:14:41	20	KIRK LOUGHEED
21	But we can discuss that for another day.		21	
22	In the meantime, I should note for the		22	
23	record the witness reserves the right to review the		23	
24	transcript and make corrections.		24	
25	Brian, I'm not sure I did that for	18:14:51	25	
	Page 186			Page 188
1	Mr. Tjong. If you're okay with it, I'd like to just	18:14:53	1	I, the undersigned, a Certified Shorthand
2	do a stipulation across the case that both sides		2	Reporter of the State of California, do hereby
3	have the 30-day review and errata right for all		3	certify;
4	transcripts regardless whether counsel puts it on		4	That the foregoing proceedings were taken
5	the record at the depo as a two-way street.	18:15:04	5	before me at the time and place herein set forth;
6	MR. FERRALL: That's fine. I thought it		6	that any witnesses in the foregoing proceedings,
7	existed as a matter of procedure anyway. So that's		7	prior to testifying, were administered an oath; that
8	fine.		8	a record of the proceedings was made by me using
9	MR. NEUKOM: I hope you're right, but glad		9	machine shorthand which was thereafter transcribed
10	to have the stipulation, even if it's unnecessary.	18:15:17	10	under my direction; that the foregoing transcript is
11	MR. FERRALL: Okay.		11	a true record of the testimony given.
12	MR. NEUKOM: Thanks very much.		12	Further, that if the foregoing pertains to
13	THE VIDEO OPERATOR: This concludes		13	the original transcript of a deposition in a Federal
14	today's videotaped deposition of Mr. Kirk Loughheed.		14	Case, before completion of the proceedings, review
15	We're off the record at 6:15 p.m. Thank you.	18:15:25	15	of the transcript [X] was [] was not requested.
16	(TIME NOTED: 6:15 p.m.)		16	I further certify I am neither financially
17	--o0o--		17	interested in the action nor a relative or employee
18			18	of any attorney or any party to this action.
19			19	IN WITNESS WHEREOF, I have this date
20			20	subscribed my name.
21			21	
22			22	Dated: 11/25/2015
23			23	
24			24	<%signature%>
25			25	CARLA SOARES
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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

CISCO SYSTEMS, INC. Case No.: 5:14-cv-05344-BLF (PSG)

Plaintiff,

v.

ARISTA NETWORKS, INC.

Defendants.

* HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY *

VIDEOTAPED DEPOSITION OF KIRK LOUGHEED

Palo Alto, California

Monday, April 4, 2016

Volume 2

Reported by:

LESLIE JOHNSON

RPR, CSR No. 11451

Job No.: 2285024

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HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

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6	7
v	8 EXHIBITS
7	9 KIRK LOUGHEED
ARISTA NETWORKS, INC	10 NUMBER DESCRIPTION PAGE
8	11 Exhibit 452 Copy of name badge; 1 page 198
Defendants	12 Exhibit 453 Black and white copy of photograph; 198
9	1 page
10	13
11	Exhibit 454 Patent Agreement; Bates stamped 208
12	KL-00000872 to 891
13	14 Exhibit 455 A Multiple Protocol Kernel for 228
14 * HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY *	Local Area Network Software
15	15 Development Reference Manual; Bates
16	stamped KL-00000001 to 93
17 VIDEOTAPED DEPOSITION OF KIRK LOUGHEED, Volume 2,	16
18 taken on behalf of Defendant, at 601 California Avenue,	17 Exhibit 456 Document entitled "Chaosnet"; Bates 238
19 Palo Alto, California, beginning at 9:25 a m and ending	stamped KL-00000186 to 250
20 at 4:37 p m , on Monday, April 4, 2016, before	18 Exhibit 457 Document entitled "Debugging 241
21 LESLIE JOHNSON, Certified Shorthand Reporter No 11451	Information"; Bates stamped
22	KL-00000564-654
23	19 Exhibit 458 DECnet Digital Network Architecture 244
24	(Phase V); Bates stamped
25	KL-00000251 to 380
	20 Exhibit 459 E-mail from Stanford Low Overhead 252
	Timesharing; Bates stamped
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1 APPEARANCES:	1 EXHIBITS (Cont)
2	2 KIRK LOUGHEED
3 FOR PLAINTIFF CISCO SYSTEMS, INC.:	3 NUMBER DESCRIPTION PAGE
4 QUINN EMANUEL URQUHART & SULLIVAN LLP	4 Exhibit 460 E-mail dated 10-Jan-83 from Barb 260
5 BY: JOHN (JAY) NEUKOM, ESQ.	at ISL to Computer Committee; Bates
6 50 California Street, 22nd Floor	stamped KL-00000868 to 871
7 San Francisco, California 94111	5 Exhibit 461 Stanford Ethernit/Gateway User and 263
8 (415)875-6600	Configuration Guide; Bates stamped
9 johnneukom@quinnemanuel.com	CSI-CLI-01315367 to 97
10 FOR DEFENDANT ARISTA NETWORKS, INC.:	6 Exhibit 462 Letter dated August 21, 1986 from 281
11 KEKER & VAN NEST LLP	Robert L. Street to Len Bosack;
12 BY: RYAN WONG, ESQ.	Bates stamped CSI-CLI-01839502
13 633 Battery Street	to 504
14 San Francisco, California 94111	10 Exhibit 463 E-mail dated 4/3/2006 from Kirk 298
15 (415)391-5400	Lougheed to Vivian Neou; Bates
16 rwong@kvn.com	stamped CSI-CLI-01124245
17 ALSO PRESENT:	11
18 SEAN GRANT, Videographer	12 Exhibit 464 Cisco's Amended Exhibit F; 44 pages 302
19	13
20	Exhibit 465 Software Unit External Functional 310
21	Specification; Bates stamped
22	CSI-CLI-00608751 to 752
23	14
24	15 Exhibit 466 ipsupport c -- miscellaneous IP 328
25	support code; 20 pages
	16 Exhibit 467 Document entitled "Part 3: Media 332
	Access Control (MAC) Bridges";
	Bates stamped ARISTANDCA00032440
	to 812
	17
	Exhibit 468 Contents of "lip" directory; 1 page 348
	18
	19
	20 Exhibit 469 Commandl c -- ASM/AGS commands; 355
	Bates stamped KL-SC-00000001 to 9
	21 Exhibit 470 Config c -- parse and act upon 358
	configuration commands; Bates
	stamped KL-SC-00000010 to 20
	22 Exhibit 471 Exec c -- ASM/AGS command level; 365
	Bates stamped KL-SC-00000021 to 32
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<p>1 EXHIBITS (Cont.)</p> <p>2 KIRK LOUGHEED</p> <p>3 NUMBER DESCRIPTION PAGE</p> <p>4 Exhibit 472 "cisco.c" source code; 1 page 371</p> <p>5 Exhibit 473 "stanford.c" source code; 1 page 371</p> <p>6 Exhibit 474 Source code; Bates stamped 375</p> <p>KL-SC-00000033 to 41</p> <p>7</p> <p>8 Exhibit 475 Source code; Bates stamped 375</p> <p>9 KL-SC-00000042 to 52</p> <p>10 Exhibit 476 Cisco Systems ASM/AGS User Manual 383</p> <p>and Configuration Guide; Bates</p> <p>11 stamped CSI-CLI-00358622 to 54</p> <p>12 * * *</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 195</p>	<p>1 THE VIDEOGRAPHER: Thank you. Will the</p> <p>2 certified court reporter please swear in the</p> <p>3 witness.</p> <p>4</p> <p>5 KIRK LOUGHEED,</p> <p>6 having been administered an oath, was examined and</p> <p>7 testified as follows:</p> <p>8</p> <p>9 EXAMINATION (RESUMED)</p> <p>10 BY MR. WONG:</p> <p>11 Q. Good morning, Mr. Lougheed.</p> <p>12 A. Good morning.</p> <p>13 Q. Mr. Lougheed, do you understand that this</p> <p>14 is a continuation of your personal deposition that</p> <p>15 was taken back on November 20th, 2015?</p> <p>16 A. I do.</p> <p>17 Q. And do you understand that you are still</p> <p>18 testifying under oath as if you were testifying at</p> <p>19 trial?</p> <p>20 A. I do.</p> <p>21 Q. And is there any reason why you cannot</p> <p>22 give full and truthful testimony today?</p> <p>23 A. There is no reason.</p> <p>24 Q. And are you generally still familiar with</p> <p>25 the ground rules for a deposition?</p> <p style="text-align: right;">Page 197</p>
<p>1 Palo Alto, California, Monday, April 4, 2016</p> <p>2 9:25 a.m.</p> <p>3</p> <p>4 THE VIDEOGRAPHER: Good morning. We're on</p> <p>5 the record. The time is 9:25 a.m., and the date is</p> <p>6 April 4th, 2016. This begins Volume 2 of the</p> <p>7 videotaped deposition of Mr. Kirk Lougheed. My name</p> <p>8 is Sean Grant, here with our court reporter, Leslie</p> <p>9 Johnson. We're here from Veritext Legal Solutions</p> <p>10 at the request of counsel for Defendant. This</p> <p>11 deposition is being held at Wilson Sonsini in Palo</p> <p>12 Alto, California. The caption of this case is</p> <p>13 "Cisco Systems Inc. versus Arista Networks Inc.,"</p> <p>14 Case No. 5:14-cv-05344-BLF.</p> <p>15 Please note that audio and video recording</p> <p>16 will take place unless all parties have agreed to go</p> <p>17 off the record. Microphones are sensitive and may</p> <p>18 pick up whispers, private conversations or cellular</p> <p>19 interference.</p> <p>20 At this time, will counsel please identify</p> <p>21 themselves and state whom they represent.</p> <p>22 MR. WONG: Ryan Wong from Kecker & Van Nest</p> <p>23 for Defendant Arista Networks.</p> <p>24 MR. NEUKOM: John Neukom for the plaintiff</p> <p>25 and also today for the witness.</p> <p style="text-align: right;">Page 196</p>	<p>1 A. Yes.</p> <p>2 Q. Okay. Well, I'll just repeat some of the</p> <p>3 more important rules. If you need to take a break</p> <p>4 at any time, just let me know. And all I'd ask is</p> <p>5 that if there is a question pending, that you answer</p> <p>6 it before we go on the break. Okay?</p> <p>7 A. (Witness nods head.)</p> <p>8 MR. WONG: Why don't we mark this as the</p> <p>9 first exhibit for today.</p> <p>10 (Exhibit 452 marked for identification.)</p> <p>11 MR. WONG: And we will mark this one as</p> <p>12 the next exhibit.</p> <p>13 (Exhibit 453 marked for identification.)</p> <p>14 MR. NEUKOM: Ryan, I have two separate</p> <p>15 pieces of paper. Are you treating these as two</p> <p>16 separate exhibits?</p> <p>17 MR. WONG: Yes. I'm going to give them</p> <p>18 two exhibit numbers and read them into the record in</p> <p>19 just a second.</p> <p>20 The court reporter has marked as</p> <p>21 Exhibit 452 a photocopy -- photo bearing Bates Nos.</p> <p>22 KL-00002202. The court reporter has also marked as</p> <p>23 Exhibit 453, a black and white photo with Bates Nos.</p> <p>24 KL-00002201.</p> <p>25 ////</p> <p style="text-align: right;">Page 198</p>

<p>1 A. A type of computer manufactured by the 2 Digital Equipment Corporation. 3 Q. And Digital Equipment Corporation is also 4 known as DEC, right? 5 A. Correct. 6 Q. And did you work with these DEC VAX 7 super-minicomputers while an employee at Stanford? 8 A. One of the -- actually, at least two of 9 the systems programmers were the ones that were 10 primarily responsible for making sure that those 11 systems ran properly. 12 Q. Was Mr. Satz one of those systems 13 programmers that -- 14 A. Yes. 15 Q. -- worked with the VAX system? 16 A. Yes. 17 Q. Is the answer the same for the VAX-11/750 18 super-minicomputers? 19 A. Yes. 20 Q. Did those VAX machines have a command-line 21 interface? 22 MR. NEUKOM: Objection. Vague. 23 BY MR. WONG: 24 Q. Did the VAX-11/780 systems have a 25 command-line interface?</p> <p style="text-align: right;">Page 223</p>	<p>1 Q. And the first full sentence of that bullet 2 point says, "Supervised a computer science 3 department electronics design engineer in the 4 hardware debugging of a DEC-20 to ethernet 5 interface." 6 The next sentence says, "I also wrote the 7 interface's control microcode, the hardware 8 diagnostics, and the operating system support for 9 the device." 10 Do you see that? 11 A. I do. 12 Q. Is that referring to the EtherTIP 13 software? 14 A. No. 15 Q. What is that referring to? 16 A. That's referring to the Massbus-Ethernet 17 Interface Subsystem. 18 Q. And that's also reflected with the acronym 19 MEIS, correct? 20 A. Yes. 21 Q. Did Cisco use any of the software for the 22 MEIS? 23 A. No. 24 Q. Can you go to the page ending with Bates 25 No. 888 in Exhibit 454.</p> <p style="text-align: right;">Page 225</p>
<p>1 MR. NEUKOM: Objection. Vague. 2 THE WITNESS: Yes. 3 BY MR. WONG: 4 Q. Were you familiar with how the VAX 5 command-line interface operated? 6 A. VAX is the name of a piece of hardware 7 that would run an operating system. 8 Q. Thank you. 9 What is the operating system that the VAX 10 hardware ran? 11 A. At Stanford there were two possibilities, 12 something called VAX VMS, and there was also 13 Berkeley UNIX. 14 Q. Is Berkeley UNIX the same as BSD? 15 A. Yes. 16 Q. Were you familiar with the VAX VMS 17 command-line interface? 18 A. No. 19 Q. Were you familiar with the Berkeley UNIX 20 command-line interface? 21 A. Yes. 22 Q. The last bullet point on the page ending 23 in 886 of Exhibit 454, do you see that? It starts 24 with "Supervised a computer science department." 25 A. Yes, I see that paragraph.</p> <p style="text-align: right;">Page 224</p>	<p>1 A. Uh-huh. Yes. I'm on that page. 2 Q. The first bullet point, or I guess the 3 only bullet point on this page starts with "Acted as 4 Stanford contact." 5 Do you see that? 6 A. Yes, I see that paragraph. 7 Q. Is it true that you acted as Stanford 8 contact with DEC for field testing of two new 9 releases of the DEC-20 operating system? 10 A. Let me finish the paragraph so I can 11 establish context. 12 Q. Sure. Please take your time. 13 A. Okay. I've read the paragraph. Your 14 question is? 15 Q. Is it true you that you acted as the 16 Stanford contact with Digital Equipment Corporation 17 for field testing two new releases of the DEC-20 18 operating system? 19 A. Yes. 20 Q. Is the DEC 20 operating system the same 21 thing as the TOPS-20 operating system? 22 A. Yes. 23 Q. Further down on this same page ending with 24 control numbers 888 on Exhibit 454, there's a 25 section called "Special Skills Knowledge or Training</p> <p style="text-align: right;">Page 226</p>

<p>1 Required Including Tools or Equipment Used."</p> <p>2 Do you see that?</p> <p>3 A. I see that.</p> <p>4 Q. And one sentence underneath that heading</p> <p>5 says "Familiarity with the hardware and protocols</p> <p>6 used in local area networks in (ethernet) and</p> <p>7 long-haul national networks (ARPANET)."</p> <p>8 Do you see that?</p> <p>9 A. I see that sentence.</p> <p>10 Q. Did I read that correctly?</p> <p>11 A. You did.</p> <p>12 Q. What protocols were you familiar with as</p> <p>13 of May 6th, 1985 that were used in local area</p> <p>14 networks?</p> <p>15 A. There -- ethernet, even in 1985 had many,</p> <p>16 many protocols. You could run PUP or Park Universal</p> <p>17 Packet. You could run PCPIP. You could run XNS.</p> <p>18 You could run -- by that time, pretty much any</p> <p>19 network protocol would run on an ethernet.</p> <p>20 Q. Was address resolution protocol a protocol</p> <p>21 that was used in local area networks?</p> <p>22 A. On ethernets, yes.</p> <p>23 Q. You can put that document aside.</p> <p>24 MR. WONG: Let's mark this one as</p> <p>25 Exhibit 455, please.</p> <p style="text-align: right;">Page 227</p>	<p>1 MR. NEUKOM: Objection. The question is</p> <p>2 phrased in the hypothetical.</p> <p>3 MR. WONG: Let me rephrase the question so</p> <p>4 it's not hypothetical.</p> <p>5 BY MR. WONG:</p> <p>6 Q. Did you obtain the document marked as</p> <p>7 Exhibit 455 before you left Stanford in July of</p> <p>8 1986?</p> <p>9 A. I believe so.</p> <p>10 Q. Do you remember if you obtained the</p> <p>11 document marked as Exhibit 455 directly from</p> <p>12 Mr. Yaeger?</p> <p>13 A. I have no memory of now I actually</p> <p>14 obtained this document.</p> <p>15 Q. Were documents -- strike that.</p> <p>16 Was the document marked as Exhibit 455</p> <p>17 available for you to get, besides going directly</p> <p>18 through Mr. Yaeger?</p> <p>19 MR. NEUKOM: Objection. Vague.</p> <p>20 THE WITNESS: I don't have a memory of how</p> <p>21 I actually obtained it. I -- these -- such</p> <p>22 documents were certainly easily obtainable at</p> <p>23 Stanford University.</p> <p>24 BY MR. WONG:</p> <p>25 Q. When you say such documents like</p> <p style="text-align: right;">Page 229</p>
<p>1 (Exhibit 455 marked for identification.)</p> <p>2 BY MR. WONG:</p> <p>3 Q. The court reporter has marked as</p> <p>4 Exhibit 455 a document bearing control numbers KL</p> <p>5 00000001 to 93.</p> <p>6 Mr. Lougheed, do you recognize the</p> <p>7 document marked as Exhibit 455?</p> <p>8 A. I recognize what it is. I don't believe I</p> <p>9 have read it before.</p> <p>10 Q. Okay. You say you recognize what it is.</p> <p>11 What is the document marked as Exhibit 455?</p> <p>12 A. It appears to be a reference manual for</p> <p>13 Bill Yaeger's software that he developed under the</p> <p>14 SUMEX project.</p> <p>15 Q. And this was produced from your personal</p> <p>16 files, correct, Exhibit 455?</p> <p>17 A. Yes.</p> <p>18 Q. Why did you have the document marked as</p> <p>19 Exhibit 455 in your personal files?</p> <p>20 A. It seemed to me to be of -- whenever I</p> <p>21 obtained it, it seemed to me to be of at least</p> <p>22 historical interest.</p> <p>23 Q. Would you have obtained the document</p> <p>24 marked as Exhibit 455 before you left Stanford in</p> <p>25 July of 1986?</p> <p style="text-align: right;">Page 228</p>	<p>1 Exhibit 455 were easily obtainable at Stanford</p> <p>2 University, how were these documents easily</p> <p>3 obtainable?</p> <p>4 A. It was a community where -- it was a</p> <p>5 research community where research reports, if you</p> <p>6 wanted them, you could -- you could ask around for</p> <p>7 them.</p> <p>8 Q. Now, you said you weren't sure if you had</p> <p>9 read the document marked as Exhibit 455, correct?</p> <p>10 A. I have no --</p> <p>11 MR. NEUKOM: Objection. Misstates prior</p> <p>12 testimony.</p> <p>13 THE WITNESS: I have no memory of reading</p> <p>14 this before. I may have. I may not have. I have</p> <p>15 no memory.</p> <p>16 BY MR. WONG:</p> <p>17 Q. Were you familiar with the functionality</p> <p>18 of the SUMEX software that Mr. Yaeger wrote while at</p> <p>19 Stanford?</p> <p>20 A. Yes.</p> <p>21 Q. Were you familiar with how the command</p> <p>22 parser worked in the SUMEX software that Mr. Yaeger</p> <p>23 wrote?</p> <p>24 A. At one point I certainly was.</p> <p>25 Q. Were you familiar with how the command</p> <p style="text-align: right;">Page 230</p>

<p>1 Q. And was Exhibit 456 a document that was in 2 your personal files? 3 A. Yes, it was. 4 Q. Okay. And why did you have this CHAOS net 5 document marked as Exhibit 456 in your personal 6 files? 7 A. Because in 1987, at the request of some 8 customers, we added CHAOS net to the Cisco router 9 software. A consultant named Eric Weaver actually 10 did the -- I believe it was Eric Weaver did the 11 actual implementation in the Cisco software. He was 12 a contractor for us. 13 Q. Okay. So your possession of the document 14 marked as Exhibit 456 was in connection with work 15 that Cisco did with respect to CHAOS net? 16 A. Correct. I suspect this was the document 17 I handed him to say I want this in the router. 18 Q. Did you ever read the document marked as 19 Exhibit 456 before you handed it to Mr. Weaver? 20 A. I may have. 21 Q. Can you turn to page 17 of Exhibit 456. 22 The control number at the bottom ends in 206. Let 23 me know when you're there, please. 24 A. Okay. I'm on page -- page 17 of the CHAOS 25 net document.</p> <p style="text-align: right;">Page 239</p>	<p>1 Q. Did you come up with the term "flow 2 control"? 3 A. No. You're doing a bit of random word 4 matching. 5 Q. Yes. Random questioning is definitely my 6 style. 7 You can set that document aside. 8 MR. WONG: Let's mark this one as the next 9 exhibit, please. 10 (Exhibit 457 marked for identification.) 11 BY MR. WONG: 12 Q. The court reporter has marked as 13 Exhibit 457 a document bearing control numbers 14 KL-00000564 to 654. 15 And Mr. Lougheed, take your time to look 16 at Exhibit 457. But my question to you is, do you 17 recognize the document marked as Exhibit 457? 18 A. There is no title to this document, other 19 than Chapter 1. It appears to be -- have to do with 20 DEC-20 hardware. So I don't -- I do not recognize 21 where this document came from. 22 Q. Okay. I'll represent to you that this 23 document was produced to us without a cover page. 24 So this is -- this is the document that was produced 25 to us.</p> <p style="text-align: right;">Page 241</p>
<p>1 Q. And the first -- strike that. At the top 2 of this page ending in control numbers 206 of 3 Exhibit 456, it says "3.8 Flow and Error Control." 4 Do you see that? 5 A. Yes. 6 Q. Do you understand what flow control is, 7 Mr. Lougheed? 8 A. In a general sense. 9 Q. Can you please explain to me what flow 10 control means in a general sense. 11 A. How you put packets onto the network and 12 what speed, rate that you -- and under what 13 conditions you put the packets onto the network. 14 That's my general understanding. I'm not sure -- 15 every protocol has its own nuances, so -- and I have 16 not read the rest of this page, so . . . 17 Q. Understood. 18 When you say every protocol has its own 19 nuances, do you mean that every protocol has its own 20 nuances for flow control? 21 A. Pretty much. 22 Q. When was -- strike that. 23 Do you know when the term "flow control" 24 was first used in the networking industry? 25 A. No.</p> <p style="text-align: right;">Page 240</p>	<p>1 Do you have any doubt that this document 2 was in your personal files that you handed over to 3 Cisco's counsel? 4 A. I don't doubt that. 5 Q. Do you know when you came into possession 6 of the TOPS-20 document marked as Exhibit 457? 7 A. Probably while I was working at Stanford, 8 if this indeed came from the contents of the boxes 9 in my garage. 10 Q. Mr. Lougheed, did you give the documents 11 that were in your garage to your counsel after the 12 first deposition took place? 13 A. There were -- yes. 14 Q. Was there anything else besides documents 15 that were stored in your garage that you provided to 16 your counsel after the first deposition of you? 17 Anything besides paper documents that you found in 18 your garage? Did you provide any other documents to 19 your counsel after your first deposition? 20 A. Just paper documents. 21 Q. Did you have -- strike that. 22 While you were working at Stanford and 23 before you left to join Cisco in July of 1986, did 24 you have TOPS-20 user manuals in your possession? 25 MR. NEUKOM: Objection. Vague.</p> <p style="text-align: right;">Page 242</p>

<p>1 A. Yes.</p> <p>2 Q. Do you know when a spanning tree is?</p> <p>3 A. Yes, I do.</p> <p>4 Q. What is a spanning tree?</p> <p>5 A. A spanning tree is a --</p> <p>6 MR. NEUKOM: Objection. Calls for</p> <p>7 opinion.</p> <p>8 THE WITNESS: It's a graph imposed on the</p> <p>9 network to ensure that packets that are being</p> <p>10 bridged do not get into loops as they are being</p> <p>11 transmitted by bridges.</p> <p>12 BY MR. WONG:</p> <p>13 Q. And is that the function that is served by</p> <p>14 a spanning tree?</p> <p>15 MR. NEUKOM: Objection. Calls for opinion</p> <p>16 testimony, and the question is phrased in the</p> <p>17 hypothetical or abstract.</p> <p>18 BY MR. WONG:</p> <p>19 Q. Let me ask the question differently,</p> <p>20 Mr. Loughheed.</p> <p>21 What is the function served by a spanning</p> <p>22 tree?</p> <p>23 MR. NEUKOM: Same objections.</p> <p>24 THE WITNESS: The spanning tree is</p> <p>25 essentially a data structure -- in effect is a data</p> <p style="text-align: right;">Page 251</p>	<p>1 Q. And the Stanford low overhead</p> <p>2 time-sharing, is that also -- does that also use the</p> <p>3 acronym LOTS?</p> <p>4 A. Yes.</p> <p>5 Q. If you turn to the first page of</p> <p>6 Exhibit 459, the Bates number ends in 1700. Let me</p> <p>7 know when you're there.</p> <p>8 A. Okay.</p> <p>9 Q. There is a -- I guess this is an e-mail at</p> <p>10 the top of the page ending in Bates Nos. 1700,</p> <p>11 correct? Is that an e-mail at the top of the page</p> <p>12 ending in Bates No. 1700?</p> <p>13 A. Yeah.</p> <p>14 Q. And there's a CC there to b.bombadil? Do</p> <p>15 you see that?</p> <p>16 A. Right.</p> <p>17 Q. Is that your e-mail address?</p> <p>18 A. That was my -- that was my user ID at the</p> <p>19 LOTS computer facility.</p> <p>20 Q. Okay. So where "b.bombadil" appears in</p> <p>21 Exhibit 459, that is your user ID, correct?</p> <p>22 A. Correct.</p> <p>23 Q. What does the "B" stand for for the</p> <p>24 b.bombadil?</p> <p>25 A. So in the -- in 1976, when they set up the</p> <p style="text-align: right;">Page 253</p>
<p>1 structure that allows bridges and other things that</p> <p>2 forward at the MAC layer -- it tells them which</p> <p>3 ports they should not forward packets on.</p> <p>4 BY MR. WONG:</p> <p>5 Q. When did first hear of the term "spanning</p> <p>6 tree"?</p> <p>7 A. During my -- during Cisco. Probably late</p> <p>8 '80s.</p> <p>9 Q. You can set that document aside.</p> <p>10 MR. WONG: Let's have that marked as the</p> <p>11 next exhibit, please.</p> <p>12 (Exhibit 459 marked for identification.)</p> <p>13 BY MR. WONG:</p> <p>14 Q. The court reporter has marked as</p> <p>15 Exhibit 459 a document bearing control numbers</p> <p>16 KL-00001699 to 1763.</p> <p>17 Mr. Loughheed, please take a moment to look</p> <p>18 at Exhibit 459 and let me know -- well, and my first</p> <p>19 question to you will be, do you recognize</p> <p>20 Exhibit 459?</p> <p>21 A. Yes.</p> <p>22 Q. And what is Exhibit 459?</p> <p>23 A. It's a computer listing of my e-mail while</p> <p>24 I was working at the Stanford low overhead</p> <p>25 time-sharing.</p> <p style="text-align: right;">Page 252</p>	<p>1 student computing facility, they needed to support</p> <p>2 several thousand users, and the operating system had</p> <p>3 a limitation that it could only support some number</p> <p>4 smaller than the total number of students. So what</p> <p>5 they did was they created top level directories A</p> <p>6 through Z, and then the dot indicates that there is</p> <p>7 a subdirectory or, you know, a subuser of that. So</p> <p>8 everybody's user ID had the initial letter, dot</p> <p>9 username.</p> <p>10 Q. Understood. I was wondering why it wasn't</p> <p>11 T. Bombadil. But I'm assuming the Bombidel refers</p> <p>12 to --</p> <p>13 A. The Tolkien character.</p> <p>14 Q. Yes.</p> <p>15 THE REPORTER: To what character?</p> <p>16 THE WITNESS: Tolkien. As in Lord of the</p> <p>17 Rings. Or actually, as in the Hobbit. No.</p> <p>18 Actually, it's Lord of the Rings.</p> <p>19 BY MR. WONG:</p> <p>20 Q. I think it's Lord of the Rings.</p> <p>21 A. What can I say? I was an undergraduate.</p> <p>22 I was stuck with that same username.</p> <p>23 Q. I would have chosen Radagast.</p> <p>24 Are you aware of the e-mail alias at Cisco</p> <p>25 called Clueless@Cisco.com?</p> <p style="text-align: right;">Page 254</p>

<p>1 BY MR. WONG: 2 Q. Can access lists be associated with 3 different routing protocols? 4 A. Yes. 5 MR. NEUKOM: Objection. Calls for opinion 6 testimony. 7 BY MR. WONG: 8 Q. Yes, right? 9 A. We have implemented such in the past. 10 Q. What other routing protocols have -- for 11 what -- strike that. 12 For what other routing protocols have you 13 implemented access lists? 14 A. I'll have to think carefully about this. 15 XNS, Banyan VINES, I believe. I'd have to go refer 16 to the Cisco documentation, but I know that we did 17 have access lists for a number of network protocols. 18 MR. WONG: Just for the court reporter's 19 knowledge, did you say Banyan VINES? 20 THE WITNESS: Banyan VINES. B-A-N-Y-A-N, 21 and then VINES, as in -- 22 MR. NEUKOM: Red vines. 23 THE WITNESS: As in red vines. Okay. 24 BY MR. WONG: 25 Q. As in a banyan tree?</p> <p style="text-align: right;">Page 315</p>	<p>1 Q. When you added the "ip access-group" 2 command, did you consider using a different term 3 other than "IP"? 4 A. I do not recall whether we had switched 5 everything to the IP's hierarchy then. I'd have to 6 refer to the documentation to see whether or not we 7 actually had an IP hierarchy or whether we assumed 8 everything was IP. 9 Q. I understand. If there had been an IP 10 hierarchy already implemented at the time you added 11 the "ip access-group" command would you have 12 considered any other term besides "IP" in the "ip 13 access-group" command? 14 MR. NEUKOM: Objection. Calls for 15 speculation, and the question poses a hypothetical. 16 THE WITNESS: I could have perhaps 17 inverted the hierarchy. I'm sorry. The question is 18 again? 19 BY MR. WONG: 20 Q. You testified that you weren't sure 21 whether or not there had been an IP hierarchy 22 implemented at the time you added this "ip 23 access-group" command? 24 A. Right. 25 Q. Assuming you checked and there was already</p> <p style="text-align: right;">Page 317</p>
<p>1 A. A banyan tree. 2 Q. So the "IP" word in the "ip access-group" 3 command is meant to indicate that the access groups 4 are for the IP protocol, correct? 5 A. It is an indication that that command 6 applies to the IP -- into the IP hierarchy of the 7 interface command. 8 Q. So if you were implementing access groups 9 for the XNS protocol, it would be "XNS 10 access-group," right? 11 A. Yes. 12 Q. Have you had -- strike that. 13 Did you come up with the term "access 14 group" in 1989? 15 A. That was the command expression I chose. 16 Q. Well, was it the first -- had you heard of 17 the term "access group" at the time that you added 18 this command to the Cisco IOS? 19 A. No, I hadn't. I had previously 20 implemented an "access class" command associated -- 21 for associating an access list with a terminal line. 22 And I needed something to associate it with an 23 interface. And I was -- I just needed something 24 different. And that was the best I could come up 25 with that day.</p> <p style="text-align: right;">Page 316</p>	<p>1 an IP hierarchy in existence when you added the "ip 2 access-group" command, would you have changed the 3 first word to be anything other than "IP"? 4 A. Given that I had made the -- made the 5 choice of "IP" as the keyword indicating Internet 6 protocol-related stuff, I would have felt 7 constrained to use that as the leading keyword. 8 Otherwise, it would be a seemingly asymmetric 9 construction in the hierarchy. 10 Q. How long did it take you to come up with 11 the "'ip access-group'" command syntax? 12 A. Not very long. All I needed was some sort 13 of keyword that had "access" in it and something 14 after it to distinguish it between class and list. 15 And as I said earlier, that was the best I could 16 come up with that day. I wasn't necessarily 17 terribly happy about it. It was not a terribly 18 descriptive command, as far as I was concerned. 19 Q. When you say "not very long," are you 20 talking about a matter of minutes? 21 A. Yep. 22 Q. How long -- did you write the source code 23 for the "ip access-group" command? 24 A. For the original, yes. 25 Q. How long did it take you to write the</p> <p style="text-align: right;">Page 318</p>

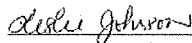
<p>1 source code for the original "ip access-group" 2 command? 3 A. So writing it for that command would have 4 been part of writing the entire functionality of 5 putting access lists onto interfaces, I guess on the 6 order of a day. 7 Q. If you turn to page 20 on Exhibit 464. 8 Let me know when you're there. 9 A. Okay. I'm on page 20. 10 Q. The second to the top command is 11 "mac-address." 12 Do you see that? 13 A. Uh-huh. 14 Q. Are you the originator of the 15 "mac-address" command? 16 A. Yes. 17 Q. How do you know that you're the originator 18 of the "mac-address" command? 19 A. I remember the problem that I was solving 20 that I needed that sort of functionality. 21 Q. What was the problem that you were trying 22 to solve by the "mac-address" command? 23 A. I needed to send packets on a serial line 24 that actually -- which a serial line does not have 25 MAC addresses, but I needed to somehow get a MAC</p> <p style="text-align: right;">Page 319</p>	<p>1 But to your knowledge, MAC is an 2 industry-standard term defined either on OSI or the 3 IEEE? 4 MR. NEUKOM: Objection. Vague. Calls for 5 opinion. 6 BY MR. WONG: 7 Q. Correct? 8 A. I believe at least IEEE has used the term 9 "MAC address." 10 Q. And at the time that you added the 11 "mac-address" command to Cisco IOS, had the IEEE, to 12 your knowledge, already started using the term "MAC 13 address"? 14 A. Yes. 15 Q. How long did it take you -- strike that. 16 How long did it take you to come up with 17 the syntax for the "mac-address" command? 18 A. I don't remember how long. I suspect it 19 was less than a day. 20 Q. Why do you say that? 21 A. I tend to make decisions quickly. 22 Q. How long did it take you to write the 23 source code for the functionality associated with 24 the "mac-address" command? 25 A. It was probably the same day.</p> <p style="text-align: right;">Page 321</p>
<p>1 address associated with that particular serial line. 2 Q. Was that related to a client request? 3 A. Yes. I don't remember the exact customer 4 or the details to it. 5 Q. Do you remember if the customer suggested 6 you calling the command "mac-address"? 7 A. I don't remember if the customer suggested 8 anything in that particular -- in that particular 9 instance. 10 Q. And is the function of the "mac-address" 11 command to associate a MAC address with a particular 12 serial line? 13 A. It could be a serial line. It could be 14 actually any interface. It would depend what 15 protocols are running across the interface as to 16 what it would do. 17 Q. And what is -- strike that. 18 The MAC part of the words "mac-address," 19 that refers to media access control, correct? 20 A. Yes. 21 Q. And we talked about that media access 22 control being a layer defined by OSI, correct? 23 A. I think we were wondering whether it was 24 OSI or IEEE. 25 Q. Thank you.</p> <p style="text-align: right;">Page 320</p>	<p>1 Q. Did you ever consider a command syntax 2 without the hyphen between "mac" and "address"? 3 A. Stylistically, I prefer dashes as opposed 4 to cramming the words together. I like commands 5 that have an English-like flavor to them. And I 6 detest periods in commands and underscores. So this 7 was . . . 8 Q. Did you ever consider two -- let me strike 9 that. 10 Do you know what a token is in the context 11 of a command? 12 A. Yes. 13 Q. Did you ever consider a command syntax of 14 "mac address"? 15 A. I don't recall if I did. 16 Q. What impact would it have, if any, on the 17 user if -- strike that. 18 Would the CLI behave differently if the 19 command was "mac address," as opposed to 20 "mac-address"? 21 MR. NEUKOM: Objection. Hypothetical 22 question. 23 THE WITNESS: Well, it behaves differently 24 in that instead of one token, there's two tokens. 25 So there would be that.</p> <p style="text-align: right;">Page 322</p>

<p>1 but for different protocols, then it was a very easy 2 generalization. 3 Q. So a matter of minutes? 4 A. Once the decision had been made to do 5 that, yes. 6 Q. What do you think is creative about the 7 command "show ip route"? 8 MR. NEUKOM: Objection. Calls for opinion 9 and legal conclusion. 10 THE WITNESS: So for the "route" command, 11 I originally needed some way of saying -- what I 12 needed was a way of indicating to the software that 13 if I had a packet destined for a particular network, 14 which is the first argument, that I send it to a 15 particular IP address, which is the IP address of a 16 router. And one of those list of network and router 17 pairs may actually be the default, if I didn't find 18 a network mentioned anywhere and couldn't figure out 19 what to do with it. Otherwise, send it to this 20 particular router or gateway. Those are the pieces 21 of information that I needed, and I just -- I chose 22 the name "route." And "IP route" came along 23 afterwards. 24 BY MR. WONG: 25 Q. Are you the originator of the "show</p> <p style="text-align: right;">Page 331</p>	<p>1 BY MR. WONG: 2 Q. The court reporter has marked Exhibit 467, 3 a document bearing control numbers 4 ARISTANDCA00032440 to 32812. 5 And my only question for you, 6 Mr. Loughed, on this document marked as Exhibit 467 7 is, is this one of the ANSI/IEEE standards that 8 defines a spanning tree? 9 MR. NEUKOM: Objection. Vague. Also 10 calls for opinion testimony. And to the extent that 11 you can find a way to answer this question insofar 12 as the task is an assessment of a document which is 13 double-sided, still over an inch thick, and appears 14 to have -- 15 THE WITNESS: 10-point font. 16 MR. NEUKOM: And appears to have about 350 17 pages. And that's right, size 6 font, size 8 font. 18 It's an unreasonable question on its face. 19 BY MR. WONG: 20 Q. Let me ask it this way, Mr. Loughed. 21 At the top of page 467, top right, you see 22 it says "1998 edition," right? 23 A. Yes. 24 Q. Have you seen IEEE/ANSI standards before? 25 A. Yes.</p> <p style="text-align: right;">Page 333</p>
<p>1 spanning-tree" command? 2 A. Yes, I am. 3 Q. What is a spanning tree? 4 A. My testimony earlier in the day addresses 5 that question. 6 Q. So thank you. 7 And your explanation of what is a spanning 8 tree earlier in today's deposition would be the same 9 for my question regarding the "show spanning-tree" 10 command; is that correct? 11 A. Right. 12 Q. And what functionality does the "show 13 spanning-tree" command perform? 14 A. It displayed global parameters having to 15 do with the spanning tree and interface-specific 16 parameters having to do with the spanning tree on 17 the box. 18 Q. And the term "spanning tree," you didn't 19 come up with that, right, Mr. Loughed? 20 A. No, I didn't. 21 Q. The term "spanning tree" is used in 22 ANSI/IEEE standards, correct? 23 A. Yes. To my knowledge. 24 (Exhibit 467 marked for identification.) 25 ////</p> <p style="text-align: right;">Page 332</p>	<p>1 Q. From the first page of Exhibit 467, do you 2 have any reason to doubt that this is an IEEE 3 standard? 4 MR. NEUKOM: Objection. Vague. Calls for 5 opinion testimony. And lack of foundation. 6 THE WITNESS: I'm willing to accept the 7 assertion that it's an IEEE standard. 8 BY MR. WONG: 9 Q. Had you ever reviewed the ANSI/IEEE 10 standard 802.1D 1998 edition? 11 A. I have never reviewed the 1998 edition of 12 IEEE 802.1D. 13 Q. Have you ever reviewed any other editions 14 of 802.1D? 15 A. A much earlier version. 16 Q. In that much earlier -- you can set that 17 down, Mr. Loughed. 18 In that earlier version of 802.1D, do you 19 recall whether the standard used the term "spanning 20 tree"? 21 MR. NEUKOM: Objection. Vague. I'm 22 pretty sure if that document uses the word 23 "standard" the way the document before uses the word 24 "standard," the document presupposes a 25 mischaracterization of the document.</p> <p style="text-align: right;">Page 334</p>

<p>1 BY MR. WONG:</p> <p>2 Q. Please answer.</p> <p>3 A. What's your question again?</p> <p>4 Q. Sure. In the earlier version of the</p> <p>5 802.1D standard that you have reviewed -- strike</p> <p>6 that.</p> <p>7 You just testified that you had reviewed</p> <p>8 an earlier version of the 802.1D standard earlier</p> <p>9 than the 1998 edition, right?</p> <p>10 A. Right.</p> <p>11 Q. And do you recall approximately what year</p> <p>12 that version of the 802.1D standard was?</p> <p>13 A. Not the year. The year I would have</p> <p>14 reviewed something like that would have been '87 or</p> <p>15 '88.</p> <p>16 Q. And in your review of that version of the</p> <p>17 802.1D standard that you would have reviewed in 1987</p> <p>18 or '88, do you recall whether the word "spanning</p> <p>19 tree" existed in that document?</p> <p>20 A. No, I don't recall if that word appeared</p> <p>21 there.</p> <p>22 Q. But when you came up with the "show</p> <p>23 spanning-tree" command for Cisco IOS, had you heard</p> <p>24 of the term "spanning tree" before that?</p> <p>25 A. Yes, I had.</p> <p style="text-align: right;">Page 335</p>	<p>1 MR. NEUKOM: Objection. Calls for opinion</p> <p>2 testimony.</p> <p>3 THE WITNESS: I don't understand what you</p> <p>4 mean by the word "creative."</p> <p>5 BY MR. WONG:</p> <p>6 Q. Do you believe that it took any degree of</p> <p>7 creativity to come up with the command "show</p> <p>8 spanning-tree"?</p> <p>9 MR. NEUKOM: Same objection. Calls for</p> <p>10 opinion testimony. Also calls for a legal</p> <p>11 conclusion.</p> <p>12 But notwithstanding my objections, you</p> <p>13 should still try to answer these questions to the</p> <p>14 best of your ability.</p> <p>15 THE WITNESS: And the question is?</p> <p>16 BY MR. WONG:</p> <p>17 Q. Do you believe that it took any creativity</p> <p>18 to come up with the command "show spanning-tree"?</p> <p>19 A. I do believe that it shows a degree of</p> <p>20 creativity.</p> <p>21 Q. And describe -- go ahead.</p> <p>22 A. I mean --</p> <p>23 Q. Were you done with your answer?</p> <p>24 A. Yes.</p> <p>25 Q. And what is creative about the command</p> <p style="text-align: right;">Page 337</p>
<p>1 Q. And why did you choose to put a hyphen</p> <p>2 between the words "spanning" and "tree"?</p> <p>3 A. Because I like English phrases and I like</p> <p>4 separating them with dashes.</p> <p>5 Q. Why did you --</p> <p>6 A. And I saw -- go ahead.</p> <p>7 Q. No, no. I interrupted you, Mr. Loughheed.</p> <p>8 Go ahead.</p> <p>9 A. And I had no concept or no belief at the</p> <p>10 time that I would need to turn that into a</p> <p>11 hierarchy.</p> <p>12 Q. And when you say -- refer to a need to</p> <p>13 turn it into a hierarchy, are you referring to the</p> <p>14 option of using a space instead of a hyphen in</p> <p>15 between the word "spanning" and "tree"?</p> <p>16 A. Yes.</p> <p>17 Q. How long did it take for you to come up</p> <p>18 with the command "show spanning-tree," the syntax?</p> <p>19 A. The syntax? Once I had the protocol</p> <p>20 working, wouldn't have been very long.</p> <p>21 Q. Matter of minutes?</p> <p>22 A. Less than a day.</p> <p>23 Q. Do you think the command "show</p> <p>24 spanning-tree" is creative?</p> <p>25 A. I don't understand.</p> <p style="text-align: right;">Page 336</p>	<p>1 "show spanning-tree"?</p> <p>2 MR. NEUKOM: Objection. Calls for a legal</p> <p>3 conclusion and calls for opinion testimony.</p> <p>4 THE WITNESS: And I just -- I'm not sure</p> <p>5 what the hell you mean by "creative."</p> <p>6 BY MR. WONG:</p> <p>7 Q. Have you -- do you know what the word</p> <p>8 "creative" means?</p> <p>9 What do you understand the word "creative"</p> <p>10 to mean? The question is, what do you understand</p> <p>11 the word "creative" to mean?</p> <p>12 MR. NEUKOM: Objection to form.</p> <p>13 THE WITNESS: It's the ability to create</p> <p>14 things. And I was creating a command expression to</p> <p>15 monitor a piece of complex software.</p> <p>16 What do you mean by "creative"?</p> <p>17 BY MR. WONG:</p> <p>18 Q. I'm going to use your definition of</p> <p>19 creative here, Mr. Loughheed. Under your definition</p> <p>20 of "creative," what's creative about the "show</p> <p>21 spanning-tree" command?</p> <p>22 MR. NEUKOM: Objection. Calls for opinion</p> <p>23 testimony and calls for a legal conclusion.</p> <p>24 THE WITNESS: Writing any piece of</p> <p>25 software involves some degree of creativity. It may</p> <p style="text-align: right;">Page 338</p>

<p>1 Q. And actually, if you look on that same 2 page, page 42 of Exhibit 464, the command right 3 above it is "timers basic (RIP)." 4 Do you see that? 5 A. Uh-huh. 6 Q. And you are also the originator of that 7 command, correct? 8 A. Yes. 9 Q. And the date of earliest known document 10 for that command is September 14th, 1989. 11 Do you see that? 12 A. Uh-huh. 13 Q. Is that -- strike that. 14 Did you work on different "timers" 15 commands at the -- roughly the same time period for 16 Cisco IOS? 17 MR. NEUKOM: Objection. Vague and 18 compound. 19 BY MR. WONG: 20 Q. Let me ask specifically, actually, about 21 these. 22 Did you work on the "timers basic" command 23 and the "timers bgp" command at the same time? 24 A. I don't know if it was the same time, but 25 it was certainly in the late '80s.</p> <p style="text-align: right;">Page 343</p>	<p>1 Q. Do you have to -- 2 A. It's either "routing-protocol" or 3 "router." The command form changed in that time 4 frame. But it's the same -- it's the same concept. 5 Q. So just so I understand, Mr. Loughheed, 6 before a user at the command-line interface types in 7 "timers bgp" as a command, before that, the user has 8 to type in a routing protocol command? 9 A. Right. For example, "router bgp," 10 "timers" plus the number, and then you would say, 11 you know, "bgp timers" or timers bgp." 12 Q. Got it. 13 And BGP refers to border gateway protocol, 14 correct? 15 A. Yes. 16 Q. And we discussed border gateway protocol 17 during your first deposition. Remember that? 18 A. That correct. 19 Q. And as the 1989, BGP was already in IETF 20 industry standards, correct? 21 A. No. 22 Q. At what stage was -- strike that. 23 Today BGP is specified in IETF industry 24 standards, correct? 25 A. It is described in an RFC that is a</p> <p style="text-align: right;">Page 345</p>
<p>1 Q. Were there already commands in Cisco IOS 2 at the time you added the "timers bgp" command where 3 the first token was the word "timers"? 4 A. Yes. 5 Q. What existing commands were present in 6 Cisco IOS that started with the first token of 7 "timers" when you added the "timers bgp" command? 8 A. They were all -- they were all subcommands 9 of the "routing" protocol command. They were -- 10 that was the only -- the only domain that was -- the 11 "timers" command at that time was for routing -- 12 adjusting timers for routing protocols. 13 Q. And just so I can understand, when you say 14 they were all subcommands of the "routing-protocol" 15 command, what is the "routing-protocol" command? 16 A. These days, it would be the "router" 17 command. And the "router" command -- it's a command 18 mode where you say "router," then the name on the 19 routing protocol, like "IGRP" or "RIP" or "BGP." 20 And then you would -- on subsequent lines, you would 21 give command expressions that would tweak stuff that 22 is specific to that particular protocol. 23 Q. So was the "timers bgp" command a 24 subcommand of the "routing-protocol" command? 25 A. Yes.</p> <p style="text-align: right;">Page 344</p>	<p>1 standard -- what the IETF calls a standard, yes. 2 Q. So as of the time that the timers BGP 3 proto- -- strike that. 4 At the time that the timers BGP command 5 was added to Cisco IOS, at what stage was the BGP 6 standardization process in the IETF, to your 7 knowledge. 8 A. Yakov Rekhter and I came up with the very 9 first version of BGP in January of 1989, wrote an 10 RFC describing it. And there were other 11 implementations that were starting to pop up after 12 we did the first couple of RFCs. I don't 13 remember -- Yakov Rekhter was the person who handled 14 the standards process within the IETF. 15 Q. Do you remember the RFC number of the 16 first BGP RFC? 17 A. I believe it was 1105. 18 Q. I think you're right. 19 The source code relating to the Cisco fork 20 of the EE-CF software that was provided to counsel 21 in this case, you testified earlier that it had 22 different -- it had copies of source code other than 23 the Cisco fork. Do you remember that testimony? 24 A. Could you refresh me as to what the 25 question was you asked and what I answered?</p> <p style="text-align: right;">Page 346</p>

<p>1 Mr. Lougheed.</p> <p>2 Now, those two sentences that you read</p> <p>3 from the Stanford Ethertip User Guide marked as</p> <p>4 Exhibit 36 and the Cisco Systems ASM/AGS User Manual</p> <p>5 marked as Exhibit 476 are exactly the same, correct?</p> <p>6 A. Yes. I wrote both sentences.</p> <p>7 Q. And so Cisco copied those two sentences</p> <p>8 from the Stanford guide marked as Exhibit 36 and put</p> <p>9 them into the Cisco guide marked as Exhibit 476,</p> <p>10 correct?</p> <p>11 MR. NEUKOM: Objection. Asked and</p> <p>12 answered a couple times now.</p> <p>13 MR. WONG: I'm asking about those two</p> <p>14 particular sentences.</p> <p>15 MR. NEUKOM: Yeah. And before you asked a</p> <p>16 blanket question and you didn't like his answer,</p> <p>17 which I thought was a pretty darn good one. So you</p> <p>18 decided to just keep him in the room --</p> <p>19 MR. WONG: Counsel.</p> <p>20 MR. NEUKOM: Look, you responded to my</p> <p>21 objection. You wanted to engage me. So I'll</p> <p>22 explain my objection. If you don't want me piping</p> <p>23 up, that's fine. Just let me make objections for</p> <p>24 the record.</p> <p>25 Now you're asking him the exact same</p> <p style="text-align: right;">Page 395</p>	<p>1 MR. WONG: I think it's our understanding</p> <p>2 that all witnesses can have 30 days or something.</p> <p>3 MR. NEUKOM: By stipulation.</p> <p>4 MR. WONG: Great.</p> <p>5 THE VIDEOGRAPHER: This concludes today's</p> <p>6 videotaped deposition of Mr. Kirk Lougheed. We're</p> <p>7 off the record at 4:37 p m.</p> <p>8 (TIME NOTED: 4:37 P.M.)</p> <p>9</p> <p>10</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 397</p>
<p>1 question after having had the fourth employee of</p> <p>2 Cisco, Mr. Lougheed, who is now here at almost 5:00</p> <p>3 reading aloud from documents. And you asked him the</p> <p>4 same question again to see if you can get a</p> <p>5 different answer. So go for it. This is starting</p> <p>6 to feel increasingly not very respectful of this</p> <p>7 witness's time.</p> <p>8 BY MR. WONG:</p> <p>9 Q. Do you want me to read the question again?</p> <p>10 I'll read the question again.</p> <p>11 A. That would be fine.</p> <p>12 Q. Cisco copied those two sentences that you</p> <p>13 just read aloud into the record for its user manual</p> <p>14 marked as Exhibit 476 from the Stanford user manual</p> <p>15 marked as Exhibit 36, correct?</p> <p>16 A. I wrote both manuals.</p> <p>17 MR. WONG: I have no further questions.</p> <p>18 THE VIDEOGRAPHER: This concludes today's</p> <p>19 videotaped deposition of Mr. Kirk --</p> <p>20 MR. NEUKOM: Oh, I'm sorry to interrupt.</p> <p>21 On behalf of Mr. Lougheed, he reserves the</p> <p>22 right to review an errata of the transcript. I</p> <p>23 don't know, Ryan, if we've been doing this by</p> <p>24 stipulation for all witnesses, even if it's not put</p> <p>25 on the record.</p> <p style="text-align: right;">Page 396</p>	<p>1 DECLARATION UNDER PENALTY OF PERJURY</p> <p>2</p> <p>3 I, KIRK LOUGHEED, the witness herein,</p> <p>4 declare under penalty of perjury that I have read the</p> <p>5 foregoing in its entirety; and that the testimony</p> <p>6 contained therein, as corrected by me, is a true and</p> <p>7 accurate transcription of my testimony elicited at said</p> <p>8 time and place.</p> <p>9</p> <p>10 Executed this _____ day of _____, 2016, at</p> <p>11 _____,</p> <p>12 (City) (State)</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17 _____</p> <p>18 KIRK LOUGHEED</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 398</p>

<p>1 REPORTER'S CERTIFICATION</p> <p>2 I, Leslie Johnson, a Certified Shorthand</p> <p>3 Reporter of the State of California, do hereby certify:</p> <p>4 That the foregoing proceedings were taken</p> <p>5 before me at the time and place herein set forth; that</p> <p>6 any witnesses in the foregoing proceedings, prior to</p> <p>7 testifying, were administered an oath; that a record of</p> <p>8 the proceedings was made by me using machine shorthand</p> <p>9 which was thereafter transcribed under my direction;</p> <p>10 that the foregoing transcript is a true record of the</p> <p>11 testimony given.</p> <p>12 Further, that if the foregoing pertains to</p> <p>13 the original transcript of a deposition in a Federal</p> <p>14 Case, before completion of the proceedings, review</p> <p>15 of the transcript [] was [] was not requested.</p> <p>16 I further certify I am neither financially interested in</p> <p>17 the action nor a relative or employee of any attorney or</p> <p>18 any party to this action.</p> <p>19 IN WITNESS WHEREOF, I have this date</p> <p>20 subscribed my name.</p> <p>21 Dated: April 19, 2016</p> <p>22</p> <p>23 </p> <p>24 LESLIE JOHNSON</p> <p>25 CSR No. 11451, RPR, CCRR</p> <p style="text-align: right;">Page 399</p>	

UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA

CISCO SYSTEMS, INC.,)
Plaintiff,)
vs.) Civil Action No.:
ARISTA NETWORKS, INC.,) 5:14-cv-05344-BLF (PSG)
Defendant.)
_____)

CONFIDENTIAL

VIDEOTAPED DEPOSITION OF DEVADAS PATIL
Palo Alto, California
Sunday, February 21, 2016
Volume 1

Reported by:
RACHEL FERRIER, CSR No. 6948
Job No. 2223126

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15 taken on behalf of the Defendant, at Wilson Sonsini	15
16 Goodrich & Rosati, 650 Page Mill Road, Palo Alto,	16
17 California, beginning at 9:25 a m and ending at	17
18 3:44 p m on Sunday, February 21, 2016, before	18
19 RACHEL FERRIER, Certified Shorthand Reporter No 6948	19
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3 For Plaintiff:	3
4 KEKER & VAN NEST LLP	4 Exhibit 310 Subpoena to Testify at a
5 BY: RYAN WONG	Deposition in a Civil
6 Attorney at Law	5 Action to Devadas Patil 21
7 633 Battery Street	6 Exhibit 311 Letter dated 2/19/16 to
8 San Francisco, CA 94111	7 Devadas Patil from Sean Park 22
9 415.773.6682	8 Exhibit 312 Resume for Devadas Patil 29
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13 QUINN EMANUEL URQUHART & SULLIVAN, LLP	11 Exhibit 314 "Business Development Trends and
14 BY: MATTHEW D. CANNON	12 Analysis for the Data Networking
15 Attorney at Law	13 Market" by Devadas Patil 107
16 50 California Street, 22nd Floor	Exhibit 315 IEEE 802.1AB Standard for
17 San Francisco, CA 94111	14 local and metropolitan
18 415.875.6412	15 area networks
19 matthewcannon@quinnemanuel.com	16 (Bates ARISTANDCA00017907
20	- 18078) 117
21	17 Exhibit 316 Spreadsheet entitled
22 Videographer:	18 "Corrected Information
23 SOSEH KEVORKIAN	19 Regarding Cisco Command
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25	with Devadas Patil" 121
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	22 Functional Specification
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1 EXHIBITS 2 NUMBER DESCRIPTION PAGE 3	1 MR CANNON: Matthew Cannon from Quinn, Emanuel 09:26AM 2 on behalf of Plaintiff Cisco and the witness 09:26AM 3 THE VIDEOGRAPHER: Thank you 09:26AM 4 DEVADAS PATIL, 09:26AM 5 having been administered an oath, was examined and 09:26AM 6 testified as follows: 09:26AM 7 EXAMINATION 09:26AM 8 BY MR WONG: 09:26AM 9 Q Good morning 09:26AM 10 A Morning 09:26AM 11 Q Please state your full name for the record 09:26AM 12 A Devadas Patil 09:26AM 13 Q And, Mr Patil, what is your home address? 09:26AM 14 A 3137 Kittery Avenue in San Ramon, California 09:26AM 15 94583 09:26AM 16 Q And who is your current employer, Mr Patil? 09:26AM 17 A GE Digital 09:27AM 18 Q Do you have a work e-mail address for GE Digital? 09:27AM 19 A I do 09:27AM 20 Q Could you please state it for the record 09:27AM 21 A It is devadas patil@ge.com 09:27AM 22 Q Do you have any personal e-mail addresses that 09:27AM 23 you use, Mr Patil? 09:27AM 24 A I do 09:27AM 25 Q Could you please state those for the record 09:27AM
4 Exhibit 318 Parser-Police Manifest, 5 Version 5 (Bates CSI-CLI-00358164) 165 6 Exhibit 319 E-mail dated 10/10/07 7 from Devadas Patil (Bates CSI-CLI-00836482) 176 8 Exhibit 320 E-mail chain dated 8/10/06 9 from Devadas Patil (Bates CSI-CLI-00817320 10 - 817321) 180 11 Exhibit 321 E-mail chain dated 8/21/06 12 from Devadas Patil (Bates CSI-CLI-0817660) 183 13 Exhibit 322 Cisco IOS Carrier Ethernet 14 Command Reference (Bates CSI-CLI-00291752 15 - 292238) 191 16 Exhibit 323 E-mail chain dated 1/5/06 17 from Devadas Patil (Bates CSI-CLI-00810826 18 - 810828) 208 19 Exhibit 324 E-mail chain dated 2/1/06 20 from Devadas Patil (Bates CSI-CLI-00811125 21 - 811128) 212 22 23 24 25	11 Q Please state your full name for the record 09:26AM 12 A Devadas Patil 09:26AM 13 Q And, Mr Patil, what is your home address? 09:26AM 14 A 3137 Kittery Avenue in San Ramon, California 09:26AM 15 94583 09:26AM 16 Q And who is your current employer, Mr Patil? 09:26AM 17 A GE Digital 09:27AM 18 Q Do you have a work e-mail address for GE Digital? 09:27AM 19 A I do 09:27AM 20 Q Could you please state it for the record 09:27AM 21 A It is devadas patil@ge.com 09:27AM 22 Q Do you have any personal e-mail addresses that 09:27AM 23 you use, Mr Patil? 09:27AM 24 A I do 09:27AM 25 Q Could you please state those for the record 09:27AM
1 Palo Alto, California; Sunday, February 21, 2016 2 9:25 a.m. 3 4 THE VIDEOGRAPHER: Good morning 09:25AM 5 THE WITNESS: Morning 09:25AM 6 THE VIDEOGRAPHER: We are on the record at 09:25AM 7 9:25 a.m. on February 21st, 2016 09:25AM 8 This is the video-recorded deposition of Devadas 09:25AM 9 Patil 09:25AM 10 My name is Soseh Kevorkian, here with our Court 09:25AM 11 Reporter, Rachel Ferrier We are here on behalf of 09:25AM 12 Defendants at 650 Page Mill Road in Palo Alto 09:25AM 13 The caption of this case is Cisco Systems, 09:25AM 14 Incorporated, versus Arista Networks, Incorporated, Case 09:25AM 15 No 5:14-cv-05344- BLF(PSG) 09:25AM 16 Please note that audio and video recording will 09:25AM 17 take place unless all parties agree to go off the 09:26AM 18 record 09:26AM 19 Microphones are sensitive They pick up 09:26AM 20 whispers, private conversations, and all cellular 09:26AM 21 interference 09:26AM 22 At this time, would counsel and all present 09:26AM 23 please identify themselves for the record 09:26AM 24 MR WONG: Ryan Wong from Kecker & Van Nest for 09:26AM 25 Defendant Arista Networks 09:26AM	1 A Dpatil44@hotmail.com. 09:27AM 2 Q Anything else? 09:27AM 3 A That's the only one I do use. 09:27AM 4 Q Okay. And you current -- or, excuse me, strike 09:27AM 5 that. 09:27AM 6 You previously worked for Cisco, correct? 09:27AM 7 A That's correct. 09:27AM 8 Q Did you have an e-mail address when you were 09:27AM 9 employed at Cisco? 09:27AM 10 A Yes. 09:27AM 11 Q And what was that e-mail address while you were 09:27AM 12 employed at Cisco? 09:27AM 13 A If I recall from five years ago, it's 09:27AM 14 dpatil@cisco.com, I think. 09:27AM 15 Q Okay. Mr. Patil, are you being represented by 09:28AM 16 counsel at this deposition? 09:28AM 17 A Yes. 09:28AM 18 Q Okay. And who's representing you at this 09:28AM 19 deposition? 09:28AM 20 A Matt Cannon. 09:28AM 21 Q Mr. Cannon -- 09:28AM 22 A Mr. Cannon -- 09:28AM 23 Q -- to your left? 09:28AM 24 A Correct. 09:28AM 25 Q Have you ever been deposed before, Mr. Patil? 09:28AM

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3 (Pages 6 - 9)

1 BY MR. WONG: 11:09AM	1 exchange information with and exchange ideas with. and 11:12AM
2 Q Can you describe for me, just so I can 11:09AM	2 so as part of that, I worked with pro- -- product 11:12AM
3 understand, at what -- what are the various stages, in 11:09AM	3 managers, and I did my own research to see who else is 11:12AM
4 your mind, are a part of the development of the LLDP 11:09AM	4 active -- actively working on this technology and what 11:12AM
5 features at Cisco? 11:09AM	5 platforms they are targeting, what markets they are 11:12AM
6 A Back then, we were following what is probably 11:09AM	6 going after, etc. and what -- ultimately, what our 11:13AM
7 known as waterfall model, and it was a classic waterfall 11:10AM	7 requirements for Phase I are 11:13AM
8 experience, in a sense, that there was market analysis, 11:10AM	8 Q You mentioned, as some of the vendors that you 11:13AM
9 slash, requirements gathering. Then there was 11:10AM	9 looked at, the HP ProCurve; is that right? 11:13AM
10 architecture, and then there was design, and then there 11:10AM	10 A That's right 11:13AM
11 was implementation, and then there was testing, in each 11:10AM	11 Q You also mentioned Nortel? 11:13AM
12 of the phases that I mentioned earlier. 11:10AM	12 A Yes 11:13AM
13 Q So the first phase of the three phases you 11:10AM	13 Q What equipment of Nortel's did you look at as 11:13AM
14 mentioned earlier was the discovery aspect, as you 11:10AM	14 part of this market analysis stage for Phase I? 11:13AM
15 called it, of implementing LLDP; correct? 11:10AM	15 A I looked at their ability to -- I was sort of 11:13AM
16 A Yes. 11:10AM	16 thinking ahead in that I looked at their platforms that 11:13AM
17 Q So the first stage of implementing Phase I -- 11:10AM	17 support the endpoints, such as desk -- desk phones, and 11:14AM
18 strike that. 11:10AM	18 see how -- see what Nortel does to discover desk phones 11:14AM
19 So when I say "Phase I of the LLDP project," do 11:10AM	19 and service them 11:14AM
20 you understand that I'm referring to the discovery 11:11AM	20 I looked at -- so that -- and later on, of 11:14AM
21 aspect of that project? 11:11AM	21 course, in Phase 3, I was looking at exactly what Nortel 11:14AM
22 A I do. 11:11AM	22 is doing to support locations 11:14AM
23 Q Now, for Phase I of the LLDP project, did the 11:11AM	23 Q So let's just stick with what you did for 11:14AM
24 list of stages you just described apply to that phase? 11:11AM	24 Phase I 11:14AM
25 A Yes. 11:11AM	25 A Yes Yes 11:14AM
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1 Q So the market analysis and requirements phase 11:11AM	1 Q Did you do anything else with respect to Nortel 11:14AM
2 is -- strike that 11:11AM	2 equipment with respect to the market analysis portion of 11:14AM
3 So the market analysis and requirement stage is 11:11AM	3 Phase I? 11:14AM
4 the first stage in the multistage process for Phase I of 11:11AM	4 A I read -- I might have read some white papers to 11:14AM
5 the LLDP project? 11:11AM	5 see, you know, how -- how endpoint-to-infrastructure 11:14AM
6 A That's correct 11:11AM	6 discovery happens in a -- in a typical Nortel 11:14AM
7 Q Is there anything that precedes the market 11:11AM	7 deployment, but that's about all for Phase I 11:14AM
8 analysis portion -- strike that 11:11AM	8 Q And why were you looking at that aspect of 11:14AM
9 Is there anything that precedes the market 11:11AM	9 Nortel's business in connection with Phase I of the LLDP 11:15AM
10 analysis stage as part of this multistage process you 11:11AM	10 project 11:15AM
11 described? 11:11AM	11 A Primarily to understand the market landscape, to 11:15AM
12 A No 11:11AM	12 see who -- who is -- who is doing this and how they are 11:15AM
13 Q So the first thing you did when you were working 11:11AM	13 doing it now and what -- what they have planned for this 11:15AM
14 on Phase I of the LLDP project was to perform a market 11:11AM	14 new technology coming in in the form of LLDP and how we 11:15AM
15 analysis to see what other vendors were doing; is that 11:11AM	15 are going at it, just an understanding of that 11:15AM
16 correct? 11:11AM	16 Q And you did a similar analysis for the HP 11:15AM
17 MR CANNON: Objection; vague, mischaracterizes 11:11AM	17 ProCurve; is that correct? 11:15AM
18 the witness's prior testimony 11:12AM	18 A No 11:15AM
19 THE WITNESS: No No It -- it -- that's not 11:12AM	19 Q What did you do for the HP ProCurve -- actually, 11:15AM
20 accurate 11:12AM	20 strike Let me re-ask -- let me rephrase the question 11:15AM
21 BY MR. WONG: 11:12AM	21 What did you look at as part of the market 11:15AM
22 Q What is inaccurate about what I just asked you? 11:12AM	22 analysis stage of Phase I when you were looking at the 11:15AM
23 A I didn't do it as a requirement I did it as 11:12AM	23 HP ProCurve? 11:15AM
24 aside effect in the sense that this whole protocol was 11:12AM	24 A My interaction with the HP ProCurve was, of 11:16AM
25 very -- was brand new and I needed someone to -- to 11:12AM	25 course, to -- to read about their product, what feature 11:16AM
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1 sets they have on that particular product, and I recall 11:16AM	1 Q And this is specific to Phase 1 of the LLDP 11:19AM
2 that my interaction with HP ProCurve was more technical 11:16AM	2 project? 11:19AM
3 in the sense that I actively exchanged LLDP concept -- 11:16AM	3 MR. CANNON: Same objection. 11:19AM
4 concepts with people representing HP ProCurve in -- in 11:16AM	4 THE WITNESS: Yes. I recall discussing how 11:19AM
5 the standards in -- in the -- in the IETF standards 11:16AM	5 sub-interfaces are handled. I recall that for sure. I 11:19AM
6 Q What LLDP concepts did you discuss with your 11:16AM	6 also recall several other discussions about some of the 11:19AM
7 contact at HP during the market analysis stage of 11:16AM	7 fields in the TLV data that we send in LLDP. 11:20AM
8 Phase 1? 11:16AM	8 BY MR. WONG: 11:20AM
9 A During the market analysis, not -- not -- nothing 11:16AM	9 Q What is TLV? 11:20AM
10 significant with HP ProCurve, I would say 11:16AM	10 A It's an acronym for type, length, and value. 11:20AM
11 Q How about just during any stages of Phase 1; what 11:17AM	11 Q Did you come up with that acronym? 11:20AM
12 type of LLDP concepts did you discuss with your 11:17AM	12 A No. 11:20AM
13 colleagues at HP ProCurve? 11:17AM	13 Q Do you know who came up with that acronym? 11:20AM
14 A I recall having discussed some of the topics in 11:17AM	14 A It is widely used in the standard. 11:20AM
15 the standard that were not immediately clear, and I 11:17AM	15 Q When you say "widely used in the standard," are 11:20AM
16 discussed the language in there to be certain that it 11:17AM	16 you referring to the LLDP standard? 11:20AM
17 means a -- means a certain entity in our implementation 11:17AM	17 A That's correct. 11:20AM
18 and how it maps to in their implementation, etc 11:17AM	18 Q Did you also speak with -- strike that. 11:20AM
19 Q Were these conver-- strike that 11:17AM	19 What type of market analysis did you do with 11:20AM
20 Were these communications by phone? 11:17AM	20 respect to Ericsson in Phase 1 of the LLDP project? 11:20AM
21 A Mainly through e-mail 11:17AM	21 A Not much. I must have -- I was -- I was under 11:20AM
22 Q And were you using your Cisco e-mail account for 11:17AM	22 time pressure to finish Phase 1 on -- in -- in a timely 11:21AM
23 those communications? 11:17AM	23 manner, and, basically, I was looking at other people 11:21AM
24 A Yes 11:17AM	24 actively involved in -- in actual development of this 11:21AM
25 Q You don't have any copies of those e-mail 11:18AM	25 product. And as a side effect of that, I was reading 11:21AM
Page 74	Page 76
1 communications that you might have had with HP ProCurve, 11:18AM	1 white papers as fast as I could to see what other 11:21AM
2 do you? 11:18AM	2 network vendors are involved in this area; discovery 11:21AM
3 A No No 11:18AM	3 area, servicing, endpoint, etc , in general, and I must 11:21AM
4 Q You mentioned that you were discussing with HP 11:18AM	4 have done some research on Ericsson as well 11:21AM
5 ProCurve topics relating to IETF standards? 11:18AM	5 Q Okay So you didn't speak to anybody at Ericsson 11:21AM
6 A The LLDP standard 11:18AM	6 who was working on LLDP? 11:21AM
7 Q Is the IETF the standard-setting body for LLDP? 11:18AM	7 A No 11:21AM
8 A I've not been in touch with LLDP for a few years 11:18AM	8 Q What about Juniper; what was your -- strike that 11:21AM
9 now, but my recollection is LLDP originated -- I don't 11:18AM	9 What type of market analysis did you do for 11:21AM
10 know whether it's LLDP or LLDP-MED -- outside of IETF 11:18AM	10 Phase 1 of the LLDP project with respect to Juniper? 11:21AM
11 first, and then two organizations have to -- have to 11:18AM	11 A None 11:21AM
12 come together to actually ratify the standard, but I 11:18AM	12 Q Okay Aside from HP ProCurve, Nortel, and 11:21AM
13 know that IETF had a big -- IEEE -- IEEE and IETF had a 11:18AM	13 Ericsson, were there any other third-party vendors that 11:22AM
14 big role in it 11:19AM	14 you investigated as part of the market analysis stage of 11:22AM
15 Q Did you discuss any implementation-related issues 11:19AM	15 Phase 1 of the LLDP project? 11:22AM
16 with the colleagues at HP ProCurve with respect to 11:19AM	16 A Yes 11:22AM
17 Phase 1 of the LLDP project? 11:19AM	17 Q What are those other vendors? 11:22AM
18 MR. CANNON: Objection; vague, asked and 11:19AM	18 A Mitel, Avaya, Polycom 11:22AM
19 answered 11:19AM	19 Q Any other vendors? 11:22AM
20 THE WITNESS: Yes 11:19AM	20 A Yes, but I can't recall their names at this time 11:22AM
21 BY MR. WONG: 11:19AM	21 Q You mentioned that you actively communicated with 11:22AM
22 Q What aspects of the actual implementation of LLDP 11:19AM	22 somebody from HP ProCurve; correct? 11:22AM
23 did you discuss with the HP ProCurve engineers? 11:19AM	23 A Yes 11:22AM
24 MR. CANNON: Objection; vague 11:19AM	24 Q Were there any other people that you actively 11:22AM
25 BY MR. WONG: 11:19AM	25 communicated with while working on Phase 1 of the LLDP 11:22AM
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1 project at Cisco? 11:22AM	1 progression of development, and being able to abstract 11:26AM
2 MR. CANNON: Objection; vague. 11:22AM	2 the current implementation to allow for that is what I 11:26AM
3 THE WITNESS: Yes. 11:22AM	3 mean by "extensibility " 11:26AM
4 BY MR. WONG: 11:22AM	4 Q So when you were discussing the LLDP project -- 11:26AM
5 Q Who else were you working with when you were 11:22AM	5 Phase 1 one of the LLDP project with your colleagues at 11:26AM
6 working on Phase 1 of the LLDP project at Cisco? 11:23AM	6 HP, did you talk about what you were planning to do for 11:26AM
7 A You mean external to Cisco? 11:23AM	7 Cisco's implementation? 11:26AM
8 Q External to Cisco, yes. 11:23AM	8 MR CANNON: Objection; vague 11:26AM
9 A I must have sent some e-mails clarifying some of 11:23AM	9 THE WITNESS: No 11:26AM
10 the language in the standard, and I don't recall the 11:23AM	10 BY MR WONG: 11:26AM
11 actual people that responded to me from the standards 11:23AM	11 Q Okay Did your colleague tell you what HP was 11:26AM
12 e-mail areas, but I would say a few e-mails with people 11:23AM	12 planning to do for HP's implementation? 11:26AM
13 other than HP ProCurve that were part of the standards 11:23AM	13 MR CANNON: Objection; vague 11:26AM
14 body, and, of course, HP ProCurve people were also in 11:23AM	14 THE WITNESS: No 11:26AM
15 the standards body. 11:23AM	15 BY MR WONG: 11:27AM
16 Q And when you are referring to "the standards," 11:23AM	16 Q Which of those vendors that we just discussed 11:27AM
17 are you referring to the IEEE? 11:23AM	17 were also in the process of implementing LLDP in their 11:27AM
18 A Yes. 11:23AM	18 products? 11:27AM
19 Q Are you an IEEE member, Mr. Patil? 11:23AM	19 A I know for sure that HP ProCurve was I -- I 11:27AM
20 A I am, but I'm not very active. 11:23AM	20 think Nortel was too, but I was not 100 percent sure 11:27AM
21 Q How long have you been a member of the IEEE? 11:23AM	21 MR WONG: Why don't we take a quick break 11:27AM
22 A I don't know whether my membership has actually 11:24AM	22 THE WITNESS: Okay 11:27AM
23 expired, but I started very early in the '90s. 11:24AM	23 THE VIDEOGRAPHER: We are going off the record at 11:27AM
24 Q And were you involved in the standard-setting 11:24AM	24 11:27 a m 11:27AM
25 process for LLDP? 11:24AM	25 (Recess taken) 11:27AM
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1 A No 11:24AM	1 THE VIDEOGRAPHER: We are back on the record at 11:33AM
2 Q Why was it important for you to find other people 11:24AM	2 11:33 a m 11:33AM
3 to talk to while you were working on Phase 1 of the LLDP 11:24AM	3 BY MR WONG: 11:33AM
4 project? 11:24AM	4 Q Before the break, Mr Patil, we were discussing 11:33AM
5 A To make the right architectural and design 11:24AM	5 the various stages that are involved in implementing the 11:33AM
6 decisions so that we don't have to tear down a lot of 11:24AM	6 LLDP project at Cisco 11:34AM
7 stuff later, post-implementation, post-testing, and 11:24AM	7 A Mm-hmm 11:34AM
8 that's the. I would say, cautious approach for a project 11:24AM	8 Q We were talking specifically about Phase 1 11:34AM
9 of this size 11:24AM	9 A Yes 11:34AM
10 Q How does talking with other vendors outside of 11:24AM	10 Q During what phase -- strike that 11:34AM
11 Cisco help you to make the right architectural and 11:24AM	11 During what stage of the stages that you 11:34AM
12 design decisions with respect to Cisco's LLDP 11:25AM	12 described are the syntaxes for the commands created? 11:34AM
13 implementation? 11:25AM	13 MR CANNON: Objection; vague 11:34AM
14 A It gives us an understanding of how this can be 11:25AM	14 THE WITNESS: Both Phase 1 and Phase 2 11:34AM
15 done in phases It helps us avoid costly architectural 11:25AM	15 BY MR WONG: 11:34AM
16 and design mistakes so that we abstract the initial 11:25AM	16 Q I'm sorry, my question was: During which of the 11:34AM
17 implementation for extensibility, and it also helps us 11:25AM	17 stages that you listed out for me are the syntaxes for 11:34AM
18 plan for things coming down the pipeline, such as 11:25AM	18 the commands, and specifically the LLDP commands, 11:34AM
19 Phase 2 or even Phase 3 when it comes to a map and 11:25AM	19 created? 11:34AM
20 locations 11:25AM	20 MR CANNON: Objection; vague 11:34AM
21 Q What do you mean by "extensibility"? 11:25AM	21 THE WITNESS: In the design specification for the 11:34AM
22 A The ability to support value-added features to 11:25AM	22 phase 11:34AM
23 target certain markets An example is something like 11:26AM	23 BY MR WONG: 11:34AM
24 inline power provisioning on endpoints through LLDP 11:26AM	24 Q And just so it's clear to me, the first stage 11:34AM
25 Knowing that it's coming in the roadmap, in the 11:26AM	25 that you described was the market analysis and 11:35AM
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1 requirement stage; correct? 11:35AM	1 Routing Information Base that I talked about earlier -- 11:37AM
2 A Correct. 11:35AM	2 or mentioned 11:37AM
3 Q And the second stage that you described was an 11:35AM	3 Q How -- focusing specifically on Phase 1 of the 11:37AM
4 architectural stage; is that right? 11:35AM	4 LLDP project, how was that a key architectural decision? 11:37AM
5 A That's correct. 11:35AM	5 MR CANNON: Objection; vague 11:37AM
6 Q And the third stage is the design stage? 11:35AM	6 BY MR WONG: 11:37AM
7 A Yes. 11:35AM	7 Q I'm using your own words here in your resume, 11:37AM
8 Q So it's the third stage where the command syntax 11:35AM	8 Mr Patil 11:38AM
9 for the LLDP commands, talking specifically with respect 11:35AM	9 How was that -- how was Phase 1 of the LLDP 11:38AM
10 to Phase 1, were created; correct? 11:35AM	10 project a key architectural decision for Cisco products? 11:38AM
11 A That's correct. 11:35AM	11 MR CANNON: Objection; vague, mischaracterizes 11:38AM
12 MR. CANNON: Objection; vague. 11:35AM	12 testimony 11:38AM
13 BY MR. WONG: 11:35AM	13 THE WITNESS: From an architectural perspective, 11:38AM
14 Q Was there any discussion with any of the third 11:35AM	14 it was -- it had to do with how to co-exist with 11:38AM
15 parties that we just discussed about the commands that 11:35AM	15 existing protocols and features on Cisco platforms 11:38AM
16 would be used for LLDP? 11:35AM	16 BY MR WONG: 11:38AM
17 MR. CANNON: Objection; vague. 11:35AM	17 Q And what did you do with respect to Phase 1 of 11:38AM
18 THE WITNESS: No. 11:35AM	18 the LLDP project to ensure that it co-existed with 11:38AM
19 BY MR. WONG: 11:35AM	19 existing protocols and features on Cisco platforms? 11:38AM
20 Q Was there any discussion with any of the third 11:35AM	20 A From an architectural standpoint, kept the LLDP 11:38AM
21 parties that we just discussed about the interface -- 11:35AM	21 database insulated and separate and disjointed from other 11:38AM
22 command-line interface in general that would be used for 11:35AM	22 discovery protocols 11:39AM
23 LLDP? 11:36AM	23 And from a protocol standpoint, made sure that 11:39AM
24 A No. 11:36AM	24 there is no relationship or collaboration between 11:39AM
25 Q Looking back at Exhibit 313 under the description 11:36AM	25 discovery protocols and they just function 11:39AM
Page 82	Page 84
1 under "Cisco Systems." 11:36AM	1 independently 11:39AM
2 A Yeah. 11:36AM	2 Q Before the break, you testified about 11:39AM
3 Q It says, "... lead design and development of 11:36AM	3 conversations that you had with someone at HP ProCurve 11:39AM
4 software modules of Cisco IOS." 11:36AM	4 regarding LLDP 11:39AM
5 Do you see that? 11:36AM	5 A Yes 11:39AM
6 A Yes. 11:36AM	6 Q Do you remember that? 11:39AM
7 Q What software modules of Cisco IOS are you 11:36AM	7 A Yes 11:39AM
8 referring to there? 11:36AM	8 Q Who was the person or persons that you spoke with 11:39AM
9 A In terms of actual leadership for those modules, 11:36AM	9 at HP ProCurve regarding Phase 1 of the LLDP project? 11:40AM
10 I led the Phase 1 for LLDP, Phase 2 of LLDP. I also led 11:36AM	10 A I do not recall their name, but I do remember 11:40AM
11 another project which was completely unrelated. 11:36AM	11 that he was a highly knowledgeable person at HP ProCurve 11:40AM
12 Q And what was that project about? 11:36AM	12 who was responsible for product development, as well as 11:40AM
13 A It was a product for developing what is called 11:36AM	13 represent HP ProCurve at IEEE 11:40AM
14 Multilayer Routing Information Base. 11:37AM	14 Q And how did you come to know of this person at HP 11:40AM
15 Q Further down in Exhibit 313, in that same 11:37AM	15 ProCurve? 11:40AM
16 paragraph, it says, "Made key architectural decisions 11:37AM	16 A I don't recall the actual event that made me 11:40AM
17 for products, resulting in successful deliveries for 11:37AM	17 aware of this person, but it might have been through 11:40AM
18 several multi-billion dollar market segments." 11:37AM	18 some keyword search that eventually led to their contact 11:40AM
19 Do you see that? 11:37AM	19 information 11:40AM
20 A Mm-hmm. 11:37AM	20 Q When you say "keyword search," what type of 11:40AM
21 Q What are you talking about there? 11:37AM	21 search are you referring to? 11:41AM
22 A I'm talking primarily about Phase 1 of LLDP and 11:37AM	22 A A search on LLDP feature set of our -- the 11:41AM
23 Phase 2 of LLDP and even, to some extent, MLRIB. 11:37AM	23 mechanics of it at a -- at a level deeper than what one 11:41AM
24 Q What was that last acronym you said? 11:37AM	24 would search for discovery protocols in general So 11:41AM
25 A "MLRIB," which stood for the Multilayer Layer 11:37AM	25 something that's technical and involved from an 11:41AM
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1 MR WONG: Right 12:24PM	1 activity for LLDP was -- was happening, and it -- I 12:28PM
2 Q The Arista Networks's EOS was an example of 12:24PM	2 recall that it was -- it was slow for a period of time 12:28PM
3 innovation in this area; correct? 12:24PM	3 in between and then it took off again. 12:28PM
4 MR CANNON: Objection; vague -- 12:24PM	4 BY MR. WONG: 12:28PM
5 THE WITNESS: Example, yes 12:24PM	5 Q And you didn't participate in any of the efforts 12:28PM
6 MR CANNON: -- mischaracterizes prior testimony, 12:24PM	6 to standardize LLDP from the '90s to 2004; is that 12:28PM
7 lacks foundation, calls for improper opinion testimony 12:24PM	7 right? 12:28PM
8 BY MR WONG: 12:24PM	8 A No. No. 12:28PM
9 Q And these are -- these are your words here on 12:24PM	9 Q And you played no role whatsoever in the creation 12:28PM
10 page 17 of Exhibit 314; correct, Mr. Patil? 12:24PM	10 of the LLDP standard; correct? 12:28PM
11 A These are my words, yes 12:24PM	11 A No. 12:28PM
12 Q And you believed them to be true when you wrote 12:24PM	12 Q And how did you first learn about LLDP? 12:28PM
13 your thesis marked as Exhibit 314; correct? 12:24PM	13 A When I was tasked to lead that project at Cisco. 12:28PM
14 MR CANNON: Objection; calls for improper 12:24PM	14 Q Who tasked you to lead that project at Cisco? 12:29PM
15 opinion testimony, lacks foundation 12:24PM	15 A My director. 12:29PM
16 THE WITNESS: These are my words These are my 12:24PM	16 Q Who was your director? 12:29PM
17 opinions 12:25PM	17 A Purnam Sheth. 12:29PM
18 MR WONG: Yeah 12:25PM	18 Q Can you spell that, please. 12:29PM
19 Q Can you please provide me with a general 12:25PM	19 A S-h-e-t-h is the last name, and first name is 12:29PM
20 description of what "LLDP" is? 12:25PM	20 P-u-r-n-a-m. 12:29PM
21 A Yes Yes, I can 12:25PM	21 Q And how did you learn about the LLDP standard, 12:29PM
22 Q What -- what is "LLDP"? 12:25PM	22 the -- the way it worked? 12:29PM
23 A "LLDP" stands for Link Layer Discovery Protocol, 12:25PM	23 A I -- upon being tasked with this -- with this 12:29PM
24 and it is a -- at a high-level, it's a standardized way 12:25PM	24 project, to lead this project, I did some initial 12:29PM
25 for devices to discover each other and know of each 12:25PM	25 research and it was very aggressive project at that 12:29PM
Page 114	Page 116
1 other. 12:25PM	1 point, and so I -- yeah, I researched it actively and 12:29PM
2 Q When you say it's a "standardized way for devices 12:25PM	2 wanted to know as much of it as possible as early as 12:29PM
3 to discover each other and know of each other," what do 12:26PM	3 possible. 12:29PM
4 you mean by a "standardized way"? 12:26PM	4 Q When were you tasked with the LLDP project? 12:29PM
5 A "Standardized" in the sense that it's a industry 12:26PM	5 A Late 2005. 12:30PM
6 standardized agreement and -- and ratified agreement on 12:26PM	6 Q And what documents, if any, did you review to 12:30PM
7 how a discovery can happen in a standardized way, and 12:26PM	7 learn about the LLDP standard? 12:30PM
8 it's meant in contrast with how proprietary discovery 12:26PM	8 A I recall reviewing the very first version of the 12:30PM
9 mechanisms can happen. 12:26PM	9 RFC that they put out that was still not ratified, but 12:30PM
10 Q When you say it's a "ratified agreement," what do 12:26PM	10 there was an RFC and that -- that got me into it, yeah. 12:30PM
11 you mean by "ratified"? 12:26PM	11 Q Did you review the IEEE standard that related to 12:30PM
12 A "Ratified" means something that has been -- 12:26PM	12 LLDP? 12:30PM
13 something that has withstood the test of time and has 12:26PM	13 A Yes. 12:30PM
14 been reviewed by several experts in the industry who -- 12:27PM	14 MR. WONG: Let's mark this as 315, please. 12:30PM
15 who have the ability to see that -- not just from a 12:27PM	15 (Exhibit 315 was marked for 12:31PM
16 feature perspective but also from a holistic perspective 12:27PM	16 identification by the Court Reporter.) 12:31PM
17 to see if it was actually viable -- viable to do that, 12:27PM	17 MR. WONG: The Reporter has marked, as 12:31PM
18 and then they collectively meet and discuss their 12:27PM	18 Exhibit 315, document bearing control numbers 12:31PM
19 concerns and refine the standard appropriately and then 12:27PM	19 ARISTANDCA00017907 to 18078. 12:31PM
20 agree on a version that is -- that can be considered 12:27PM	20 Q Mr. Patil, do you recognize the document marked 12:31PM
21 standard. 12:27PM	21 as Exhibit 315? 12:31PM
22 Q Do you know when LLDP was standardized? 12:27PM	22 A I do. 12:31PM
23 MR. CANNON: Objection; vague. 12:27PM	23 Q And what is the document marked as Exhibit 315? 12:31PM
24 THE WITNESS: The initial attempt, I think, from 12:27PM	24 A This is the 802.1AB, which is the technical name 12:31PM
25 late '90s to early -- to 2004 is when the standards 12:28PM	25 for LLDP, and it's an IEEE standard that represents the 12:31PM
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1 initial version of LLDP 12:31PM	1 implement LLDP, was it just you who was involved in that 12:34PM
2 Q And when was this IEEE standard approved? 12:31PM	2 effort? 12:34PM
3 A I don't recall the exact dates, but sometime in 12:31PM	3 A I recall that the first three months were 12:34PM
4 2007, is what I think the initial LLDP standard itself 12:32PM	4 extremely aggressive, and I was the only one actually 12:34PM
5 got approved 12:32PM	5 taking the lead on it and doing everything -- all the 12:34PM
6 Q Okay If you look at page 2 of 802.1AB -- excuse 12:32PM	6 stages of it in the -- in the first three -- three 12:34PM
7 me 12:32PM	7 months, so, yes, in the first three months, but no after 12:35PM
8 If you look at page 2 of Exhibit 315, there are 12:32PM	8 that 12:35PM
9 several dates there of -- of approval 12:32PM	9 Q And after the first three months, who else was 12:35PM
10 Do you see that? 12:32PM	10 involved in the LLDP project at Cisco? 12:35PM
11 A Page -- 12:32PM	11 A A lot of the -- there are a lot of testing people 12:35PM
12 Q I'm sorry, it's the second page of the actual 12:32PM	12 who were -- who got involved, a lot of people from 12:35PM
13 exhibit, not -- not the numbered page 2 12:32PM	13 individual business units who wanted to sort of, for 12:35PM
14 A Yeah, so second page here, copyrights -- I'm 12:32PM	14 lack of a better term, acquire this technology for their 12:35PM
15 looking at the physical second page 12:32PM	15 platform Their engineers wanted to get involved, and 12:35PM
16 Q Mm-hmm 12:32PM	16 they there were also people in our own NSSTG that were 12:35PM
17 A Is that what you mean? 12:32PM	17 supporting me 12:35PM
18 Q That's correct 12:32PM	18 THE VIDEOGRAPHER: Counsel 12:35PM
19 A This is page 1 and this is page 2 12:33PM	19 MR. WONG: Yes? 12:35PM
20 Q That's right 12:33PM	20 Why don't we take a break right now 12:36PM
21 A So approved 28 June 2005 and approved March 2005, 12:33PM	21 THE VIDEOGRAPHER: We are going off the record at 12:36PM
22 yes 12:33PM	22 12:35 p.m. This is the end of Media 2 12:36PM
23 Q So does that match your recollection of when the 12:33PM	23 (Lunch recess taken) 12:36PM
24 LLDP standard was approved? 12:33PM	24 ---o0o--- 12:36PM
25 A Approved, but not ratified and finalized 12:33PM	25
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1 Q I see 12:33PM	1 AFTERNOON SESSION 1:03 P.M. 12:36PM
2 What's the difference between the approval of a 12:33PM	2 12:36PM
3 standard and the ratification and finalization of a 12:33PM	3 (Exhibit 316 was marked for 12:36PM
4 standard? 12:33PM	4 identification by the Court Reporter) 01:03PM
5 MR. CANNON: Objection; vague, lacks foundation 12:33PM	5 THE VIDEOGRAPHER: We are on the record at 01:03PM
6 THE WITNESS: I have not been in the standards 12:33PM	6 1:01 -- 1:03 p.m. This is the beginning of Media 3 in 01:03PM
7 bodies actively myself, and my understanding is the 12:33PM	7 the deposition of Devadas Patil 01:03PM
8 various phases of it leading up -- leading to the actual 12:33PM	8 BY MR. WONG: 01:03PM
9 ratification whereby experts in that area of interest 12:33PM	9 Q Welcome back from the break, Mr. Patil 01:03PM
10 agree on a certain standard 12:33PM	10 A Thank you 01:03PM
11 BY MR. WONG: 12:33PM	11 Q The Court Reporter has marked, during the break, 01:04PM
12 Q And did you review the 802.1AB standard marked as 12:33PM	12 as Exhibit 316, a document that's been placed in front 01:04PM
13 Exhibit 315 while you were working on the LLDP 12:34PM	13 of you 01:04PM
14 project -- 12:34PM	14 Do you see that? 01:04PM
15 A That's correct -- 12:34PM	15 A Yes 01:04PM
16 Q -- for Cisco? 12:34PM	16 Q And I'll represent to you, Mr. Patil, that this 01:04PM
17 A -- yes 12:34PM	17 is a document that was provided to Arista's attorneys by 01:04PM
18 Q Did you review the standard, or at least a draft 12:34PM	18 Cisco's attorneys, and it lists -- it includes a table 01:04PM
19 of the IEEE LLDP standard, in the course of Phase 1 of 12:34PM	19 that has a list of commands on the left-side column 01:04PM
20 the LLDP project? 12:34PM	20 Do you see that? 01:04PM
21 A That's correct 12:34PM	21 A Yes 01:04PM
22 Q Do you recall reviewing the IEEE LLDP standard 12:34PM	22 Q Please take a moment, Mr. Patil, and look at 01:04PM
23 during the 2005 time period? 12:34PM	23 Exhibit 316 and, in particular, the commands that are 01:04PM
24 A Yes 12:34PM	24 listed on the left-hand side of the table. Let me know 01:04PM
25 Q When you were tasked by your supervisor to 12:34PM	25 when you are done 01:04PM
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1 A Okay. Yeah, I'm done. 01:04PM	1 mentioned, did the LLDP project involve implementing 01:07PM
2 Q Do you understand that Cisco has identified you 01:04PM	2 LLDP on those other operating systems? 01:07PM
3 as the author or originator of the commands lifted -- 01:04PM	3 A I was not aware of that 01:07PM
4 listed on the left-side column of Exhibit 316? 01:05PM	4 Q Okay So your personal involvement in Phase 1 of 01:07PM
5 A Yes. 01:05PM	5 the LLDP project focused only on implementing LLDP for 01:07PM
6 Q Okay. Now, are these commands listed in 01:05PM	6 Cisco IOS; correct? 01:08PM
7 Exhibit 316 associated with the LLDP project that we 01:05PM	7 A Mm-hmm Yeah 01:08PM
8 have been talking about this morning? 01:05PM	8 Q We mentioned -- strike that 01:08PM
9 A Yes. 01:05PM	9 You mentioned the different stages that were part 01:08PM
10 Q Were these commands added to Cisco IOS as part of 01:05PM	10 of Phase 1 of the LLDP project 01:08PM
11 Phase 1 of the LLDP project? 01:05PM	11 Do you remember that? 01:08PM
12 A Yes. That's correct, yes. 01:05PM	12 A Yes 01:08PM
13 Q Okay. You can set that aside for now, Mr. Patil. 01:05PM	13 Q Can you let me know -- strike that 01:08PM
14 We were talking before the break about how you 01:05PM	14 Can you list for me again the stages in the order 01:08PM
15 became involved in the LLDP project. 01:05PM	15 that they are handled? 01:08PM
16 Do you remember that? 01:05PM	16 MR CANNON: Objection; asked and answered 01:08PM
17 A Mm-hmm. 01:05PM	17 THE WITNESS: It's market analysis, slash, 01:08PM
18 Q Were there particular Cisco products that the 01:05PM	18 requirements as Stage 1 Architecture would be Stage 2 01:08PM
19 LLDP implementation was going to apply to? 01:05PM	19 Design would be Stage 3, and implementation and testing 01:08PM
20 A Yes. 01:05PM	20 would be Stages 4 and 5 01:08PM
21 Q Okay. And I'm asking at the time that you 01:05PM	21 BY MR WONG: 01:08PM
22 started working on the LLDP project. 01:05PM	22 Q Testing is the fifth stage; correct? 01:08PM
23 Do you understand? 01:05PM	23 A Yes 01:08PM
24 A Mm-hmm. 01:05PM	24 Q And it would go in that order, from Stage 1 to 01:08PM
25 Q What Cisco products were targeted for the LLDP 01:05PM	25 Stage 2 to Stage 3 to Stage 4 to Stage 5; correct? 01:09PM
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1 implementation at the start of Phase 1 of the project? 01:06PM	1 A Technically, yes, but in the interest of time, 01:09PM
2 A The initial rollout was for the Catalyst family 01:06PM	2 some of these phases will -- stages will overlap. 01:09PM
3 of enterprise switches, the Catalyst 6500, the 01:06PM	3 Q How long did Phase 1 of the LLDP project take to 01:09PM
4 Catalyst 3000 series was soon to follow after that and, 01:06PM	4 go from Stage 1 to Stage 5? 01:09PM
5 later on, other platforms, including the SR1K, it opted 01:06PM	5 A I would say Stage 1 to Stage 5, roughly six 01:09PM
6 the standard 01:06PM	6 months. 01:09PM
7 Q When you say "later on, other platforms," what do 01:06PM	7 Q So it took six months to go from the 01:09PM
8 you mean by "later on"? 01:06PM	8 marketing/requirements stage all the way through the 01:09PM
9 A "Later on" as in the 2010-'11 time frame, yeah 01:06PM	9 fifth testing stage for -- for Phase 1; correct? 01:09PM
10 Q Okay So initially in 2005, though, what were 01:06PM	10 A Yes. 01:09PM
11 the targeted Cisco products for the LLDP implementation? 01:06PM	11 Q Which of the five stages consumed the most time 01:09PM
12 A The Catalyst switches 01:06PM	12 out of those six months? 01:09PM
13 Q And in terms of the operating system that the 01:06PM	13 A Architecture and design. 01:10PM
14 LLDP implementation would apply to, was it just Cisco 01:07PM	14 Q Oh, Stages 2 and 3? 01:10PM
15 IOS? 01:07PM	15 A Yes. 01:10PM
16 A Yes 01:07PM	16 Q Did either architecture or design take more time 01:10PM
17 Q Okay You are aware of other operating systems 01:07PM	17 than the other? 01:10PM
18 that are used by other Cisco products? 01:07PM	18 A I would say architecture took -- took more than a 01:10PM
19 A I am 01:07PM	19 couple -- couple months to firm up. 01:10PM
20 Q What are the other operating systems that you are 01:07PM	20 Q So how many months or weeks -- strike that. 01:10PM
21 aware of that are used by other Cisco products? 01:07PM	21 How long, approximately, did it take for the 01:10PM
22 A The Cisco XR, Cisco ENA I think it's been 01:07PM	22 design stage of Phase 1 of the LLDP project to be 01:10PM
23 renamed the NX-OS There's also -- what do they call -- 01:07PM	23 completed? 01:10PM
24 the software router, but those are the main ones 01:07PM	24 A About three and a half to four weeks. 01:10PM
25 Q And those other operating systems that you just 01:07PM	25 Q And what is part of the design stage for Phase 1 01:10PM
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1 my reviewers' discussion, a good. I would say -- I mean, 01:16PM	1 proprietary protocol like CDP? 01:19PM
2 if you just add up all the time phases, maybe three man 01:16PM	2 MR. CANNON: Objection; vague, lacks foundation, 01:19PM
3 days to four man days 01:16PM	3 and calls for improper opinion testimony. 01:19PM
4 BY MR. WONG: 01:16PM	4 MR. WONG: Let me -- let me take a step back 01:19PM
5 Q And when you say "man days," you mean 9:00 to 01:16PM	5 here. 01:19PM
6 5:00? 01:16PM	6 Q You are -- you are familiar with CDP; correct? 01:19PM
7 A Yes 01:16PM	7 A Yes. 01:19PM
8 Q Now, you testified, before the break, that you 01:16PM	8 Q And you -- you were familiar with CDP from your 01:19PM
9 had reviewed the IEEE LLDP standard that we marked as 01:17PM	9 time working at Cisco; correct? 01:19PM
10 Exhibit 315 sometime in 2005 01:17PM	10 A Yes. Yes. 01:19PM
11 Do you remember that testimony? 01:17PM	11 Q What type of experience did you have working with 01:19PM
12 A Yes 01:17PM	12 CDP from your employment at Cisco? 01:19PM
13 Q During what stage of Phase I of the LLDP project 01:17PM	13 A I -- before getting into this project, I didn't 01:19PM
14 did you review the IEEE LLDP standard? 01:17PM	14 have a lot of opportunity or need to work with CDP. I 01:19PM
15 A Mainly in the market analysis and architecture 01:17PM	15 know that it existed, and after I got tasked with this, 01:19PM
16 phases 01:17PM	16 I -- I -- I looked at it and got deeper knowledge of it 01:19PM
17 Q So those would be Phases I and -- excuse me, 01:17PM	17 and understood that it is a proprietary protocol and we 01:19PM
18 those would be Stages 1 and 2? 01:17PM	18 are standardizing it in LLDP and -- yeah. 01:20PM
19 A Yes 01:17PM	19 Q And so during what stage of the five stages that 01:20PM
20 Q And did you review the IEEE LLDP standard from 01:17PM	20 we have been talking about for Phase I of the LLDP 01:20PM
21 front to back? 01:17PM	21 project did you look at Cisco's implementation of CDP? 01:20PM
22 A I made a full attempt to do that, yes I don't 01:17PM	22 A The first three. 01:20PM
23 know if I reviewed every word of it, but 01:17PM	23 Q And what did you -- what did you review to get up 01:20PM
24 Q And you made a full attempt to review the 01:17PM	24 to speed on Cisco's implementation of CDP? 01:20PM
25 complete IEEE LLDP standard before moving on to the 01:17PM	25 A I -- I looked at the code. I looked at the 01:20PM
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1 design stage of Phase I of the LLDP project; correct? 01:17PM	1 specifications, and I probably discussed with the 01:20PM
2 MR. CANNON: Objection; vague 01:18PM	2 original developer for it, and that's about what I must 01:20PM
3 THE WITNESS: Yes I mean, I didn't read the -- 01:18PM	3 have done, yeah. 01:20PM
4 each cell of the table, but from a general understanding 01:18PM	4 Q Is LLDP based at all on CDP, to your knowledge? 01:20PM
5 and the main concepts, yes 01:18PM	5 MR. CANNON: Objection; vague, lacks foundation, 01:20PM
6 BY MR. WONG: 01:18PM	6 calls for improper opinion testimony. 01:21PM
7 Q Why was it important to review as much of the 01:18PM	7 THE WITNESS: It's very similar, and I -- it's 01:21PM
8 IEEE LLDP standard as possible before moving on to the 01:18PM	8 certainly heavily influenced by CDP, but I -- I -- I 01:21PM
9 design stage of Phase I of the LLDP project? 01:18PM	9 would be wrong to say that it is based on CDP. 01:21PM
10 MR. CANNON: Objection; vague, assumes facts not 01:18PM	10 BY MR. WONG: 01:21PM
11 in evidence, mischaracterizes testimony 01:18PM	11 Q What are the similarities between CDP and LLDP, 01:21PM
12 THE WITNESS: Because we wanted to do a very 01:18PM	12 to your knowledge? 01:21PM
13 solid job of the architecture, and, fundamentally, we 01:18PM	13 MR. CANNON: Objection; vague, lacks foundation, 01:21PM
14 were, from an architecture standpoint, trying to 01:18PM	14 and calls for improper opinion testimony. 01:21PM
15 understand how they should co-exist with CDP 01:18PM	15 THE WITNESS: The mechanics of it, meaning we 01:21PM
16 BY MR. WONG: 01:18PM	16 send it -- there is a frequency of keep-alive messages. 01:21PM
17 Q And what is "CDP"? 01:18PM	17 There is a frequency of initial discovery as opposed to 01:21PM
18 A Oh, Cisco Discovery Protocol 01:18PM	18 a push button, one point say -- message saying, hey, I'm 01:21PM
19 Q And was Cisco Discovery Protocol an 01:18PM	19 alive, and until I send another message that I'm not 01:21PM
20 industry-standardized protocol? 01:19PM	20 alive, don't even bother. 01:21PM
21 A No 01:19PM	21 There are various paradigms of how this can be 01:21PM
22 Q What was it, then? 01:19PM	22 done, right? So in that respect, it's -- it's similar, 01:21PM
23 A Cisco proprietary discovery protocol 01:19PM	23 and that's how it influences the -- the standard 01:22PM
24 Q What's the difference between a 01:19PM	24 protocol in LLDP. 01:22PM
25 industry-standardized protocol like LLDP and a 01:19PM	25 BY MR. WONG: 01:22PM
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1 Q Did you come up with the term "neighbors" in the 01:32PM	1 and there is no right answer for this, but my personal 01:34PM
2 sense of discovery? 01:32PM	2 opinion is a yes. 01:34PM
3 A No. 01:32PM	3 BY MR. WONG: 01:34PM
4 Q Where did the term "neighbors" come from as used 01:32PM	4 Q And why is that important, Mr. Patil? 01:34PM
5 in the sense of discovery? 01:32PM	5 MR. CANNON: Same objections. 01:34PM
6 MR. CANNON: Objection; lacks foundation. 01:32PM	6 THE WITNESS: My personal opinion is that devices 01:34PM
7 BY MR. WONG: 01:32PM	7 should freely discover each other and collaborate to 01:35PM
8 Q If you know. 01:32PM	8 bring about functionality, and that's the reason they 01:35PM
9 A More from intuition, more from just being able to 01:32PM	9 should be -- there should be a standard. 01:35PM
10 communicate it correctly. 01:32PM	10 BY MR. WONG: 01:35PM
11 Q Communicate it correctly to who -- strike that. 01:32PM	11 Q And when you say devices should be able to freely 01:35PM
12 Communicate it directly to who? 01:32PM	12 discover each other, you are referring to devices from 01:35PM
13 A The reviewers, the -- the reviewers and people 01:32PM	13 different vendors; correct? 01:35PM
14 who will give me suggestions on where -- what -- what to 01:32PM	14 A That's correct. 01:35PM
15 change or how to improve it. 01:33PM	15 Q And the only way that you can have devices from 01:35PM
16 Q Why is it that a non-Cisco device cannot interact 01:33PM	16 different vendors to freely discover each other, as you 01:35PM
17 with a Cisco device in the process of discovering each 01:33PM	17 say, would be to have a standard to do that; correct? 01:35PM
18 other as neighbors, as you say here on page 3 of 01:33PM	18 MR. CANNON: Objection; vague, lacks foundation, 01:35PM
19 Exhibit 317? 01:33PM	19 calls for improper opinion testimony. 01:35PM
20 MR. CANNON: Objection; vague, incomplete 01:33PM	20 THE WITNESS: That's correct. 01:35PM
21 hypothetical, calls for improper opinion testimony, 01:33PM	21 BY MR. WONG: 01:35PM
22 lacks foundation. 01:33PM	22 Q And, finally, the last sentence in this 01:35PM
23 THE WITNESS: Because the existing protocols back 01:33PM	23 paragraph, top of page 3 of Exhibit 317, says, "LLDP was 01:35PM
24 then were proprietary. Cisco had its own proprietary 01:33PM	24 standardized by IEEE as part of 802.1ab, and Cisco's 01:35PM
25 protocol for discovery. Model [phonetic] had its own 01:33PM	25 implementation will be based on this standard." 01:35PM
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1 proprietary protocol for discovery, and they don't talk 01:33PM	1 Do you see that? 01:35PM
2 to each other. That's what I meant. 01:33PM	2 A Yes 01:35PM
3 BY MR. WONG: 01:33PM	3 Q Right 01:35PM
4 Q And the next sentence in this paragraph, you 01:33PM	4 This 802.1AB that you are referring to in 01:35PM
5 wrote: "Thus there is a need for Cisco devices to 01:33PM	5 Exhibit 317 is the same standard marked as Exhibit 315 01:36PM
6 comply with an industry standard for network topology 01:33PM	6 here; correct? 01:36PM
7 discovery." 01:33PM	7 A That's correct 01:36PM
8 Do you see that? 01:33PM	8 Q Okay And is it correct that Cisco's 01:36PM
9 A Yes. 01:33PM	9 implementation of LLDP was based upon the IEEE standard 01:36PM
10 Q Why is there a need for Cisco devices to comply 01:33PM	10 marked as Exhibit 315? 01:36PM
11 with an industry standard for network topology 01:33PM	11 MR. CANNON: Objection; vague 01:36PM
12 discovery, as you wrote in Exhibit 317? 01:34PM	12 THE WITNESS: It is based upon that, right 01:36PM
13 MR. CANNON: Objection; vague, lacks foundation, 01:34PM	13 BY MR. WONG: 01:36PM
14 calls for improper opinion testimony. 01:34PM	14 Q And that was intentional; correct? 01:36PM
15 THE WITNESS: The answer is in the very previous 01:34PM	15 MR. CANNON: Objection; vague 01:36PM
16 sentence for that, yeah. Basically says that a 01:34PM	16 MR. WONG: Let me rephrase the question 01:36PM
17 non-Cisco device cannot interact with a Cisco device in 01:34PM	17 Q When you were working on implementing LLDP in 01:36PM
18 the process of discovery. 01:34PM	18 Cisco's devices, you intended for the implementation to 01:36PM
19 BY MR. WONG: 01:34PM	19 follow the IEEE standard marked as Exhibit 315; correct? 01:36PM
20 Q Is it important for a non-Cisco device to be able 01:34PM	20 MR. CANNON: Objection; vague 01:36PM
21 to interact with a Cisco device in the process of 01:34PM	21 THE WITNESS: Correct 01:36PM
22 discovering each other as neighbors? 01:34PM	22 BY MR. WONG: 01:36PM
23 MR. CANNON: Objection; vague, lacks foundation, 01:34PM	23 Q You intended Cisco's implementation of LLDP to be 01:36PM
24 calls for improper opinion testimony. 01:34PM	24 compliant with the IEEE standard marked as Exhibit 315; 01:36PM
25 THE WITNESS: This is an architectural question, 01:34PM	25 right? 01:37PM
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1 A Compliant with, yes 01:37PM	1 that with one -- with just one vendor's equipment just 01:40PM
2 Q In the third paragraph on page 3 of Exhibit 317, 01:37PM	2 to make SNMP work, and that level of interoperability at 01:40PM
3 first sentence says, "LLDP facilitates the use of 01:37PM	3 the SNMP level can be very handy in -- in -- in larger 01:40PM
4 standard management tools such as SNMP in a multi-vendor 01:37PM	4 networks. 01:40PM
5 network " 01:37PM	5 BY MR. WONG: 01:40PM
6 Do you see that? 01:37PM	6 Q If there wasn't the standardization for SNMP 01:40PM
7 A Yes 01:37PM	7 inquiries and you had a multivendor network, would you 01:40PM
8 Q What do you mean by that statement? 01:37PM	8 have to write different SNMP inquiries for each network? 01:40PM
9 A So the answer to that might get a little 01:37PM	9 MR. CANNON: Objection; vague, incomplete 01:41PM
10 technical, but I'll say that anyway 01:37PM	10 hypothetical, lacks foundation, calls for improper 01:41PM
11 Part of the IEEE standard is also a specification 01:37PM	11 opinion testimony. 01:41PM
12 of topology Management Information Base, which can be 01:37PM	12 THE WITNESS: If that were the case, then -- then 01:41PM
13 developed to make SNMP queries, so if the Management 01:37PM	13 we are -- we are essentially talking of vendor-specific 01:41PM
14 Information Base can be standard across all vendors, 01:37PM	14 Management Information Bases, and that would, at the 01:41PM
15 that means that the SNMP queries will apply universally 01:38PM	15 very least, at least require some level of nonstandard 01:41PM
16 across all vendors, and that's the -- the added 01:38PM	16 or tailored queries for each vendor. 01:41PM
17 advantage of standardizing this 01:38PM	17 BY MR. WONG: 01:41PM
18 Q And what is "SNMP"? 01:38PM	18 Q If you turn back to Exhibit 315, it's the IEEE 01:42PM
19 A It -- it stands for Simple Network Management 01:38PM	19 standard for LLDP. 01:42PM
20 Protocol 01:38PM	20 A Yes. 01:42PM
21 Q And how was -- what's the function or purpose of 01:38PM	21 Q Now, LLDP is a defined term in the IEEE standard; 01:42PM
22 SNMP? 01:38PM	22 correct? 01:42PM
23 MR. CANNON: Objection; vague 01:38PM	23 A Yes. 01:42PM
24 THE WITNESS: The purpose of SNMP is to, 01:38PM	24 Q In fact, if you look to page 5 of -- and I'm 01:42PM
25 essentially, allow network administrators and engineers 01:38PM	25 looking -- pointing to page 5 at the bottom of the page 01:42PM
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1 and developers to be able to create network information 01:38PM	1 of Exhibit 315, there is a section on the top that it 01:42PM
2 and send -- send trap -- what are called -- technically 01:38PM	2 says "Definitions and numerical representation " 01:42PM
3 called "traps," SNMP traps, to signal significant events 01:39PM	3 Do you see that? 01:42PM
4 in a network. And it's a protocol that persists network 01:39PM	4 A Yes 01:42PM
5 information in a -- in a place called MIB, Management 01:39PM	5 Q And entry 316 -- 01:42PM
6 Information Base, and then provides a user interface 01:39PM	6 A Yes 01:42PM
7 to -- to query that data. 01:39PM	7 Q -- defines Link Layer Discovery Protocol and, in 01:42PM
8 BY MR. WONG: 01:39PM	8 parentheses, LLDP 01:42PM
9 Q And I think you said that if the Management 01:39PM	9 Do you see that? 01:42PM
10 Information Base, or MIB, can be standard across all 01:39PM	10 A Mm-hmm 01:42PM
11 vendors, that means that the SNMP inquiries [sic] will 01:39PM	11 Q So you were aware that LLDP was a defined acronym 01:42PM
12 apply universally across all vendors; right? 01:39PM	12 in the actual IEEE standard while you were working on 01:43PM
13 A Yes. 01:39PM	13 Phase 1 of the LLDP project; correct? 01:43PM
14 Q So that means that a network administrator and 01:39PM	14 MR. CANNON: Objection; vague 01:43PM
15 engineers can use the same SNMP inquiries for different 01:39PM	15 THE WITNESS: Yes 01:43PM
16 vendor products; correct? 01:39PM	16 BY MR. WONG: 01:43PM
17 A Correct, if they are connect -- interconnected. 01:39PM	17 Q If you turn the page to page 6 -- 01:43PM
18 Q And what's the advantage of -- what's the 01:39PM	18 A Mm-hmm 01:43PM
19 advantage to a network administrator to be able to use 01:40PM	19 Q -- entry 3121 01:43PM
20 the same SNMP inquiries for different vendor products? 01:40PM	20 Do you see that? 01:43PM
21 MR. CANNON: Objection; vague, lacks foundation, 01:40PM	21 A Yes 01:43PM
22 calls for improper opinion testimony. 01:40PM	22 Q It says, "type, length, value (TLV) " 01:43PM
23 THE WITNESS: If a certain topology or deployment 01:40PM	23 Do you see that? 01:43PM
24 includes multiple -- inputs equipment from multiple 01:40PM	24 A Yes 01:43PM
25 vendors, they don't have to tear that apart and replace 01:40PM	25 Q You were aware, by Stage 1 or at least Stage 2 of 01:43PM
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1 Phase I of the LLDP project, that the IEEE standard for	01:43PM	1 that?	01:45PM
2 LLDP defined the acronym TLV; correct?	01:43PM	2 MR. WONG: I'll tell you once I see it. Yes,	01:45PM
3 MR. CANNON: Objection; vague, mischaracterizes	01:43PM	3 page 39. Control number is -- ends in 17959.	01:46PM
4 the document.	01:43PM	4 Q Are you there?	01:46PM
5 THE WITNESS: Yes.	01:43PM	5 A Yeah, I am.	01:46PM
6 BY MR. WONG:	01:43PM	6 Q So Section 10.3.4 is called "Too many neighbors."	01:46PM
7 Q In fact, on page 7 of Exhibit 315, at the very	01:43PM	7 Do you see that?	01:46PM
8 top, it's a section called "Acronyms and abbreviations";	01:43PM	8 A Mm-hmm.	01:46PM
9 correct?	01:43PM	9 Q Now, we were talking earlier about the use of the	01:46PM
10 A Yes.	01:43PM	10 word "neighbors" in the functional specification that	01:46PM
11 Q And both LLDP and TLV are listed as defined	01:43PM	11 you wrote --	01:46PM
12 acronyms within the IEEE LLDP standard; right?	01:43PM	12 A Yes.	01:46PM
13 A Yes.	01:44PM	13 Q -- right?	01:46PM
14 Q And you were aware of that before you began the	01:44PM	14 A Yes.	01:46PM
15 design stage for Phase I of the LLDP project; right?	01:44PM	15 Q Is this use of the word "neighbors" here in the	01:46PM
16 A Yes.	01:44PM	16 IEEE specification the -- the same use of the word	01:46PM
17 Q And you were aware of that during the design	01:44PM	17 "neighbors" that you were using in the functional	01:46PM
18 period for the LLDP project; correct?	01:44PM	18 specification?	01:46PM
19 A Yes.	01:44PM	19 MR. CANNON: Objection; vague.	01:46PM
20 Q And if you look at Exhibit 316, which is this	01:44PM	20 THE WITNESS: I was -- I read this specification	01:46PM
21 list of commands?	01:44PM	21 thoroughly, so I -- yeah, I was influenced by some of	01:46PM
22 A Okay.	01:44PM	22 the language in here.	01:47PM
23 Q Are you there?	01:44PM	23 BY MR. WONG:	01:47PM
24 Each of the commands associated with you include	01:44PM	24 Q But you -- you became familiar with the	01:47PM
25 the acronym LLDP.	01:44PM	25 terminology relevant to LLDP by reading the IEEE	01:47PM
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1 Do you see that?	01:44PM	1 standard on LLDP; right?	01:47PM
2 A Yes	01:44PM	2 MR. CANNON: Objection; vague.	01:47PM
3 Q That LLDP is the same LLDP that is defined within	01:44PM	3 THE WITNESS: Yes.	01:47PM
4 the IEEE LLDP standard; right?	01:44PM	4 BY MR. WONG:	01:47PM
5 MR. CANNON: Objection; vague	01:44PM	5 Q And in particular here, you were aware that the	01:47PM
6 THE WITNESS: It's -- yeah, it -- it refers to	01:44PM	6 term "neighbors" was used in the IEEE LLDP standard;	01:47PM
7 the Link Layer Discovery Protocol	01:44PM	7 right?	01:47PM
8 BY MR. WONG:	01:45PM	8 A Mm-hmm.	01:47PM
9 Q I mean, that's the same acronym that appears here	01:45PM	9 MR. CANNON: Objection; vague.	01:47PM
10 on page 7 of Exhibit 315; right? Under "Acronyms and	01:45PM	10 BY MR. WONG:	01:47PM
11 abbreviations" within the IEEE standard; correct?	01:45PM	11 Q Oh, I'm sorry, can you -- let me -- let me ask	01:47PM
12 MR. CANNON: Objection; documents speak for	01:45PM	12 the question one more time.	01:47PM
13 themselves	01:45PM	13 And in particular here, Section 10.3.4 of	01:47PM
14 THE WITNESS: Yes	01:45PM	14 Exhibit 315, you were aware that the term "neighbors"	01:47PM
15 BY MR. WONG:	01:45PM	15 was used in the IEEE LLDP standard, yes?	01:47PM
16 Q And your choice of LLDP in each of the commands	01:45PM	16 MR. CANNON: Objection; vague.	01:47PM
17 listed on Exhibit 316, that was intentionally meant to	01:45PM	17 THE WITNESS: Yes.	01:47PM
18 refer to the LLDP acronym within the IEEE standard;	01:45PM	18 BY MR. WONG:	01:47PM
19 right?	01:45PM	19 Q Can you turn to page -- or Section 5.2, please,	01:48PM
20 MR. CANNON: Objection; vague	01:45PM	20 of Exhibit 315, and that is page 8.	01:48PM
21 THE WITNESS: Yes	01:45PM	21 Are you there?	01:48PM
22 BY MR. WONG:	01:45PM	22 A Yes.	01:48PM
23 Q If you look at Section 10.3.4 of Exhibit 315 --	01:45PM	23 Q Section 5.2 on page 8 of Exhibit 315 says	01:48PM
24 let me know when you are there	01:45PM	24 "Required capabilities."	01:48PM
25 MR. CANNON: Do you have the page number for	01:45PM	25 Do you see that?	01:48PM
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1 A Yes 01:48PM	1 Q So the LLDP implementation that you worked on at 01:50PM
2 Q And under that, it says, "A system for which 01:48PM	2 Cisco -- and, in particular, Phase 1 -- supported a 01:50PM
3 conformance to this standard is claimed shall, for all 01:48PM	3 transmit-only operating mode? 01:50PM
4 ports for which support is claimed, include the 01:48PM	4 A Yes. I don't recall the -- I don't remember it 01:51PM
5 following capabilities," and then it lists items a 01:48PM	5 very clearly, but, yes. 01:51PM
6 through k 01:48PM	6 Q Okay. And did it also support a receive only -- 01:51PM
7 Do you see that? 01:48PM	7 excuse me. 01:51PM
8 A Yes 01:48PM	8 Did it also support a receive-only operating 01:51PM
9 MR CANNON: Objection; mischaracterizes the 01:48PM	9 mode? 01:51PM
10 document 01:48PM	10 MR. CANNON: Objection; vague, lacks foundation. 01:51PM
11 BY MR. WONG: 01:48PM	11 THE WITNESS: Let me take a moment. Yes. 01:51PM
12 Q Did I read that correctly, Mr. Patil? 01:48PM	12 BY MR. WONG: 01:51PM
13 MR CANNON: Objection; mischaracterizes the 01:48PM	13 Q And did it also support a transmit and receive 01:51PM
14 document 01:48PM	14 operating mode? 01:51PM
15 THE WITNESS: You did 01:48PM	15 MR. CANNON: Objection; vague, lacks foundation. 01:51PM
16 BY MR. WONG: 01:48PM	16 THE WITNESS: Yes. 01:51PM
17 Q And did the Cisco products for which you worked 01:49PM	17 BY MR. WONG: 01:51PM
18 on the LLDP implementation conform to the standard 01:49PM	18 Q And each of those features that we just talked 01:51PM
19 marked as Exhibit 315? 01:49PM	19 about, those were implemented as part of Phase 1 of the 01:51PM
20 MR CANNON: Objection; vague, lacks foundation, 01:49PM	20 LLDP project that you worked on, Mr. Patil? 01:51PM
21 calls for improper opinion testimony 01:49PM	21 MR. CANNON: Objection; vague. 01:51PM
22 MR. WONG: Let me rephrase the question 01:49PM	22 THE WITNESS: Yes. 01:51PM
23 Q Were the required capabilities listed in 01:49PM	23 BY MR. WONG: 01:51PM
24 Section 5 2 of Exhibit 315 implemented when you did the 01:49PM	24 Q If you turn to page 43 of Exhibit 315 -- let me 01:52PM
25 LLDP implementation for Cisco's products? 01:49PM	25 know when you are there. 01:52PM
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1 MR CANNON: Objection; vague, compound, lacks 01:49PM	1 A Yes 01:52PM
2 foundation, and calls for improper opinion testimony 01:49PM	2 Q -- section 10 5 2 is called "Statistical 01:52PM
3 THE WITNESS: I don't know how many are specific 01:49PM	3 counters " 01:52PM
4 deal with are implemented, but the focus was to be as 01:49PM	4 Do you see that? 01:52PM
5 compliant as possible 01:49PM	5 A Yes 01:52PM
6 BY MR. WONG: 01:49PM	6 Q And, under that, it says, "Statistical counters 01:52PM
7 Q If you look at subsection i under Section 5 2 -- 01:49PM	7 shall be provided to accumulate operational statistics 01:52PM
8 A Yes 01:50PM	8 on a per-port basis " 01:52PM
9 Q -- it says, "The protocol shall conform to the 01:50PM	9 Do you see that? 01:52PM
10 specifications for all Clause 10 subclauses indicated in 01:50PM	10 A Yes 01:52PM
11 Table 10-1 for the particular operating mode," and then 01:50PM	11 Q Is it your understanding that the support of 01:52PM
12 in parentheses it has "transmit only, receive only, or 01:50PM	12 statistical counters is required by the IEEE LLDP 01:52PM
13 transmit and receive," close parentheses, "being 01:50PM	13 standard? 01:52PM
14 implemented " 01:50PM	14 MR CANNON: Objection; vague, lacks foundation, 01:52PM
15 Do you see that? 01:50PM	15 calls for improper opinion testimony 01:52PM
16 A Yes 01:50PM	16 THE WITNESS: Can you repeat the question again? 01:52PM
17 Q Did I read that correctly? 01:50PM	17 MR. WONG: Sure 01:52PM
18 A Yes 01:50PM	18 Q Is it your understanding that providing 01:52PM
19 Q Did the LLDP implementation that you worked on at 01:50PM	19 statistical counters is a requirement of complying with 01:52PM
20 Cisco include this capability described by subsection i 01:50PM	20 the IEEE LLDP standard? 01:53PM
21 under Section 5 2? 01:50PM	21 MR CANNON: Same objections 01:53PM
22 MR CANNON: Objection; vague, lacks foundation, 01:50PM	22 THE WITNESS: Yes 01:53PM
23 calls for improper opinion testimony 01:50PM	23 BY MR. WONG: 01:53PM
24 THE WITNESS: Yes, it included 01:50PM	24 Q And did you, in fact, support statistical 01:53PM
25 BY MR. WONG: 01:50PM	25 counters when you worked on the LLDP implementation at 01:53PM
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1 Cisco? 01:53PM	1 Do you see that? 01:56PM
2 MR CANNON: Same objections 01:53PM	2 A Yes. 01:56PM
3 THE WITNESS: Yes 01:53PM	3 Q What are "MIB tables"? 01:56PM
4 BY MR WONG: 01:53PM	4 A So "MIB tables" are the -- the storage that make 01:56PM
5 Q Now, you were looking at Exhibit 316 while you 01:53PM	5 SNMP queries possible, so MIBs are -- essentially 01:56PM
6 were confirming your answer; correct? 01:53PM	6 support information for SNMP. 01:56PM
7 A That's correct 01:53PM	7 Q And so are -- are the tables different from the 01:56PM
8 Q What -- what were you looking for in Exhibit 316 01:53PM	8 MIBs themselves? 01:56PM
9 to confirm your answer? 01:53PM	9 A MIBs -- MIB tables are like the blueprint for the 01:56PM
10 MR CANNON: Objection; mischaracterizes 01:53PM	10 actual tables -- I'm sorry, MIB tables are the blueprint 01:56PM
11 testimony 01:53PM	11 for the actual MIB data, if that makes sense. 01:56PM
12 THE WITNESS: I was looking at the CLI I 01:53PM	12 Q MIB tables -- I'm sorry, can you explain that? 01:56PM
13 vaguely recalled that I supported that, but I was 01:53PM	13 So let me -- let me ask the question again. 01:57PM
14 looking at the -- the list of CLIs here to -- to confirm 01:53PM	14 How -- strike that. 01:57PM
15 that it -- it was in Phase 1 01:54PM	15 Are tables different from the MIBs themselves? 01:57PM
16 BY MR WONG: 01:54PM	16 A In -- in the -- and I have not used this language 01:57PM
17 Q And which CLI command did you look at to confirm 01:54PM	17 for a long time, and I've not used SNMP in a long time, 01:57PM
18 that the support of counters was included in Phase 1 of 01:54PM	18 but my understanding is that the language of SNMP -- in 01:57PM
19 the LLDP project? 01:54PM	19 the language of SNMP, the MIB table is like a blueprint. 01:57PM
20 MR CANNON: Objection; vague, mischaracterizes 01:54PM	20 It's called the data that is housed in the MIB. 01:57PM
21 testimony 01:54PM	21 Q And the -- the term "MIB table," that -- is that 01:57PM
22 THE WITNESS: I just confirmed that "show lldp 01:54PM	22 a term that is familiar to those in networking industry? 01:57PM
23 traffic" does exist in this table so that I can answer 01:54PM	23 MR. CANNON: Objection; vague, lacks foundation, 01:57PM
24 you 01:54PM	24 calls for improper opinion testimony. 01:57PM
25 BY MR WONG: 01:54PM	25 THE WITNESS: Yes. 01:57PM
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1 Q If you turn to page 49 of Exhibit 315 -- let me 01:54PM	1 BY MR. WONG: 01:57PM
2 know when you are there. 01:54PM	2 Q And you certainly know what a "MIB table" is if 01:57PM
3 A Yes. 01:54PM	3 you heard that term used; correct? 01:58PM
4 Q -- if you look under Section 11.2.2, it's called 01:54PM	4 A Yes. 01:58PM
5 "TLV selection management." 01:54PM	5 Q And you would understand what a "MIB table" is 01:58PM
6 Do you see that? 01:54PM	6 based upon your experience working in the networking 01:58PM
7 A Yes. 01:54PM	7 industry; correct? 01:58PM
8 Q What is "TLV selection management"? 01:54PM	8 A Yes. 01:58PM
9 A So some of the data that is sent in a discovery 01:54PM	9 Q What was the process at Cisco for selecting a 01:58PM
10 packet is mandatory, and some of it is optional, and 01:55PM	10 command syntax? And we can talk specifically about the 01:58PM
11 what the standard calls for is the ability to specify 01:55PM	11 commands listed on Exhibit 316 -- 01:58PM
12 which of the optional TLVs the admin wants to send on a 01:55PM	12 A Mm-hmm. 01:58PM
13 particular port or suppress on a particular port, so 01:55PM	13 Q -- but -- so let me just rephrase the question, 01:58PM
14 that's what TLV selection management essentially means. 01:55PM	14 actually. 01:58PM
15 Q And when you worked on Phase 1 of the LLDP 01:55PM	15 For the commands listed in Exhibit 316, what was 01:58PM
16 project at Cisco, did you include the ability for TLV 01:55PM	16 the process at Cisco for selecting the command syntax? 01:58PM
17 selection in that implementation? 01:55PM	17 MR. CANNON: Objection; vague, lacks foundation, 01:58PM
18 A Yes. 01:55PM	18 calls for speculation. 01:58PM
19 Q In that first paragraph below Section 11.2.2 in 01:55PM	19 THE WITNESS: Well, there is -- the -- the 01:58PM
20 Exhibit 315 -- 01:56PM	20 product owner, which is me, lead developer for the 01:58PM
21 A Mm-hmm. 01:56PM	21 product, comes up with initial proposal, and it is, 01:58PM
22 Q -- the second sentence says, "The following LLDP 01:56PM	22 essentially, reviewed by a group of people that are 01:58PM
23 variables cross reference to LLDP local systems 01:56PM	23 highly experienced for -- for usability and 01:59PM
24 configuration MIB tables," and then it -- there's a 01:56PM	24 extensibility, and so on, so there are certain criteria 01:59PM
25 remainder of the sentence. 01:56PM	25 that they look -- look at, including usability, 01:59PM
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1 subcommands under certain -- at certain places, and 02:16PM	1 Q Did you consider that guideline when you were 02:19PM
2 that -- that's -- that's what it means 02:16PM	2 devising the command syntaxes listed on Exhibit 316? 02:19PM
3 Q And why is that important when coming up with a 02:16PM	3 MR CANNON: Objection; vague 02:19PM
4 command syntax? 02:16PM	4 THE WITNESS: Yes In general, yes 02:19PM
5 MR CANNON: Objection; vague, lacks foundation, 02:16PM	5 BY MR WONG: 02:19PM
6 incomplete hypothetical, calls for improper opinion 02:16PM	6 Q How important is the vocabul- -- strike that 02:19PM
7 testimony 02:16PM	7 How important is -- is understanding the 02:19PM
8 THE WITNESS: To support extensibility in -- in 02:16PM	8 vocabulary of the intended user of a command to coming 02:19PM
9 general in the sense that we might do certain things in 02:17PM	9 up with a command syntax, in your view? 02:19PM
10 Phase 1 and we might plan to include more commands at a 02:17PM	10 MR CANNON: Objection; vague, lacks foundation, 02:19PM
11 certain level in -- in the command hierarchy at a later 02:17PM	11 calls for improper opinion testimony 02:19PM
12 phase, and that is if you know you already want to do 02:17PM	12 THE WITNESS: It's fairly important 02:19PM
13 that But sometimes we don't even know, and it's all 02:17PM	13 BY MR WONG: 02:20PM
14 the more pressing at that point to -- for -- for it to 02:17PM	14 Q Did you consider the vocabulary of the intended 02:20PM
15 be designed for extensibility 02:17PM	15 user of the LLDP functionality when you were coming up 02:20PM
16 BY MR WONG: 02:17PM	16 with the commands listed on Exhibit 316? 02:20PM
17 Q Did you consider extensibility when you were 02:17PM	17 MR CANNON: Objection; vague 02:20PM
18 proposing the command syntaxes for the commands listed 02:17PM	18 THE WITNESS: Yes 02:20PM
19 on Exhibit 316? 02:17PM	19 BY MR WONG: 02:20PM
20 MR CANNON: Objection; vague 02:17PM	20 Q Do you think it's important to have guidelines 02:20PM
21 THE WITNESS: Definitely, yes 02:17PM	21 for the addition of new commands to a command-line 02:20PM
22 BY MR WONG: 02:17PM	22 interface? 02:20PM
23 Q If you turn to page 4 of Exhibit 318, No 6 -- 02:17PM	23 MR CANNON: Objection; vague, incomplete 02:20PM
24 let me know when you are there 02:18PM	24 hypothetical, lacks foundation, calls for improper 02:20PM
25 A Okay 02:18PM	25 opinion testimony 02:20PM
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1 Q -- it says, "When naming a command, try to pick 02:18PM	1 THE WITNESS: Yes. 02:20PM
2 names that would be familiar to people in the industry " 02:18PM	2 BY MR. WONG: 02:20PM
3 Do you see that? 02:18PM	3 Q Why do you think it's important to have 02:20PM
4 A Yes 02:18PM	4 guidelines for the addition of new commands to a 02:20PM
5 Q When you came up with the commands listed on 02:18PM	5 command-line interface? 02:20PM
6 Exhibit 316, did you try to pick names that would be 02:18PM	6 MR. CANNON: Same objections. 02:20PM
7 familiar to people in the industry? 02:18PM	7 THE WITNESS: The primary reason is the inability 02:20PM
8 MR CANNON: Objection; vague 02:18PM	8 to reverse commands and the need for backward 02:21PM
9 THE WITNESS: Yes 02:18PM	9 compatibility at every stage of the product evolution. 02:21PM
10 BY MR WONG: 02:18PM	10 And that calls for basically putting out commands in a 02:21PM
11 Q And did you try to use accepted industry acronyms 02:18PM	11 manner that is backward compatible and extensible. 02:21PM
12 when coming up with the commands listed in Exhibit 316? 02:18PM	12 BY MR. WONG: 02:21PM
13 MR CANNON: Objection; vague 02:18PM	13 Q So, in your view, considering backwards 02:21PM
14 THE WITNESS: Yes 02:18PM	14 compatibility and extensibility are both important when 02:21PM
15 BY MR WONG: 02:18PM	15 coming up with a new command; correct? 02:21PM
16 Q If you look down at the bottom of page 4, 02:18PM	16 MR. CANNON: Objection; vague, mischaracterizes 02:21PM
17 No 10 -- let me know when you are there 02:18PM	17 testimony, lacks foundation, calls for improper opinion 02:21PM
18 A Yeah 02:19PM	18 testimony, incomplete hypothetical. 02:21PM
19 Q -- it says, "Commands should tend to be 02:19PM	19 THE WITNESS: In the context of the CLI we are 02:21PM
20 self-explanatory so that a relatively knowledgeable user 02:19PM	20 talking about, that would be correct. 02:21PM
21 can figure out the command function from the command and 02:19PM	21 BY MR. WONG: 02:21PM
22 on-line help without having to scurry off to the 02:19PM	22 Q And did you consider backwards compatibility and 02:21PM
23 manuals " 02:19PM	23 extensibility when you proposed the commands listed on 02:21PM
24 Do you see that? 02:19PM	24 Exhibit 316? 02:22PM
25 A Yes 02:19PM	25 MR. CANNON: Objection; vague. 02:22PM
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1 hierarchy. 02:38PM	1 come up with the syntax of "clear lldp counters"? 02:42PM
2 If you want a strict hierarchy, you would have an 02:38PM	2 MR. CANNON: Objection; vague. 02:42PM
3 intermediate node and list all the specific options, but 02:38PM	3 THE WITNESS: Oh, just that one command? 02:42PM
4 since there aren't any, I might have taken this 02:38PM	4 MR. WONG: Mm-hmm. 02:42PM
5 position; although, it's -- it's -- it may seem a little 02:38PM	5 THE WITNESS: I don't know, 15 minutes. 02:42PM
6 bit weak for in terms of future-proofing things. 02:38PM	6 BY MR. WONG: 02:42PM
7 So there's a -- there's a -- there's a balance 02:39PM	7 Q Okay. How long did it take you, approximately, 02:42PM
8 between future-proofing and -- and verbosity, and -- and 02:39PM	8 to do the source code writing to implement the 02:42PM
9 the more you try to feature-proof, the more verbose you 02:39PM	9 functionality for the "clear lldp counters" command? 02:42PM
10 can become, so it's more of a subjective column how you 02:39PM	10 MR. CANNON: Objection; vague, assumes facts not 02:42PM
11 design, keeping all of these in mind, yeah. 02:39PM	11 in evidence. 02:42PM
12 Q Thank you. 02:39PM	12 THE WITNESS: Okay. That would be, again, 02:42PM
13 And after letter "d" on Exhibit 321, you say, 02:39PM	13 15 minutes, and I have to add that this is a easiest one 02:42PM
14 quote: It is more intuitive for first-time users, end 02:39PM	14 to implement. 02:42PM
15 quote. 02:39PM	15 BY MR. WONG: 02:42PM
16 Do you see that? 02:39PM	16 Q For the "clear lldp table" command -- 02:42PM
17 A Yes. 02:39PM	17 A Mm-hmm. 02:42PM
18 Q What did you mean by that? 02:39PM	18 Q -- what functionality does that perform? 02:43PM
19 A This means that -- that user interface should 02:39PM	19 A That is, again, a reset, but more at the enable 02:43PM
20 flow naturally in a sense that if I've never used 02:39PM	20 level in the sense that, let's say, a device comes up 02:43PM
21 anything similar, I should be pretty much able to -- I 02:39PM	21 and it discovers ten neighbors and we want to come in 02:43PM
22 should be able to come in and type in a reasonable 02:39PM	22 and manually reset the table by making it forget all 02:43PM
23 keyword for things and get help on it and be able to 02:40PM	23 those ten neighbors instantly, then we would use that 02:43PM
24 complete a configuration within a reasonable amount of 02:40PM	24 command. 02:43PM
25 time rather than going through hours of research on it. 02:40PM	25 Q And approximately how long did it take you to 02:43PM
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1 Q And that approach that you just described, did 02:40PM	1 come up with the syntax of "clear lldp table"? 02:43PM
2 you apply that approach for the commands that are listed 02:40PM	2 MR. CANNON: Objection; vague 02:43PM
3 in Exhibit 316? 02:40PM	3 THE WITNESS: The answer would be very similar to 02:43PM
4 MR. CANNON: Objection; vague. 02:40PM	4 the other "clear" command 02:43PM
5 THE WITNESS: The -- what is 316? This is the 02:40PM	5 BY MR. WONG: 02:43PM
6 one -- okay. This -- it -- it certainly influenced our 02:40PM	6 Q About 15 minutes? 02:43PM
7 structure for these commands. Yeah, so intuitiveness, 02:40PM	7 A Yes 02:43PM
8 extensibility, usability, aesthetics are all factors 02:40PM	8 Q And did it take you also about 15 minutes to 02:43PM
9 that we considered. 02:40PM	9 write the underlying source code for the functionality 02:43PM
10 BY MR. WONG: 02:41PM	10 of the "clear lldp table" command? 02:43PM
11 Q Let's look at Exhibit 316 now, Mr. Patil. 02:41PM	11 A No 02:43PM
12 A Yeah. 02:41PM	12 Q How long, approximately, did it take you to come 02:43PM
13 Q Starting with the first command, you were 02:41PM	13 up with the -- strike that 02:43PM
14 associated with "clear lldp counters." 02:41PM	14 How long, approximately, did it take you to write 02:43PM
15 Do you see that? 02:41PM	15 the source code for the "clear lldp table" command? 02:43PM
16 A Yes. 02:41PM	16 MR. CANNON: Objection; vague 02:44PM
17 Q What function does the "clear lldp counters" 02:41PM	17 THE WITNESS: I can't quantify it readily, but it 02:44PM
18 command perform? 02:41PM	18 would be, if you tally the total time spent on it, maybe 02:44PM
19 A It's basically a reset, if you will, of all the 02:41PM	19 a couple hours, because there is dependencies to handle 02:44PM
20 statistics that have been accumulated over a period of 02:41PM	20 It's not as easy as setting a bunch of numbers to zero 02:44PM
21 time, and if you want to start off on a clean slate 02:41PM	21 BY MR. WONG: 02:44PM
22 again at a certain period of time on a -- on a certain 02:41PM	22 Q And for all of the commands listed on 02:44PM
23 router or switch, then you could issue that command and 02:42PM	23 Exhibit 316, Mr. Patil, can you describe for me, 02:44PM
24 it will clear all the statistics. 02:42PM	24 generally, what type of source code you would need to 02:44PM
25 Q And how long did it take you, approximately, to 02:42PM	25 write to implement the functionality? 02:44PM
Page 187	Page 189

<p>1 MR CANNON: Objection; compound, vague, lacks 02:44PM 2 foundation, incomplete hypothetical, calls for improper 02:44PM 3 opinion testimony 02:44PM 4 THE WITNESS: So to clarify the question, what 02:44PM 5 type of code needs to be written to clear the command 02:44PM 6 for the "clear" commands? 02:44PM 7 MR WONG: No, no 02:44PM 8 Q So, for example, you know, to write the source 02:44PM 9 code for any of these commands listed on Exhibit 316 -- 02:44PM 10 A Yeah 02:44PM 11 Q -- what are the types of source code that would 02:44PM 12 need to be written in order to implement them? 02:45PM 13 MR CANNON: Objection; compound, vague, lacks 02:45PM 14 foundation, incomplete hypothetical, calls for improper 02:45PM 15 opinion testimony 02:45PM 16 THE WITNESS: The source code is written in C -- 02:45PM 17 C language, and, essentially, all these commands have a 02:45PM 18 callback which can be implemented as a C function, and 02:45PM 19 whenever a user travels to a certain point and they pass 02:45PM 20 tree, that function that gets attached to that node in 02:45PM 21 the tree gets executed, and, basically, it's -- it's 02:45PM 22 given the information about the construct that it's 02:45PM 23 handling, and, at that point, they -- they just -- we 02:45PM 24 just go in and change the fields in there 02:45PM 25 BY MR WONG: 02:45PM</p> <p style="text-align: right;">Page 190</p>	<p>1 MR CANNON: And because of that, we are going to 02:47PM 2 have a standing objection to questions about this 02:47PM 3 partial document without the sufficient context for it 02:47PM 4 to be reviewed or understood 02:47PM 5 BY MR WONG: 02:47PM 6 Q Now, Mr. Patil, I'm just providing this exhibit 02:47PM 7 for you so that you can refresh your recollection, if 02:48PM 8 you need to -- 02:48PM 9 A Mm-hmm 02:48PM 10 Q -- about what these various commands do I won't 02:48PM 11 ask you any other questions about this exhibit, but feel 02:48PM 12 free to refer to Exhibit 322 -- 02:48PM 13 A Yeah 02:48PM 14 Q -- to answer my questions 02:48PM 15 A Yes 02:48PM 16 Q So my question that I posed a few minutes ago is: 02:48PM 17 What is the function performed by the "lldp holdtime" 02:48PM 18 command? 02:48PM 19 MR CANNON: Objection -- 02:48PM 20 THE WITNESS: So 02:48PM 21 MR CANNON: -- lacks foundation, document speaks 02:48PM 22 for itself 02:48PM 23 THE WITNESS: -- after reading, I still cannot 02:48PM 24 completely understand why we did that or what the 02:48PM 25 concept is, because it's been a while since I wrote this 02:48PM</p> <p style="text-align: right;">Page 192</p>
<p>1 Q And that explanation you just provided applies to 02:45PM 2 all of the commands listed here on Exhibit 316; correct? 02:45PM 3 A Yes. 02:45PM 4 MR. CANNON: Objection; vague, compound. 02:45PM 5 BY MR. WONG: 02:45PM 6 Q What is the functionality performed by the "lldp 02:46PM 7 holdtime" command? 02:46PM 8 A Yeah, so that's an interesting one. It's a 02:46PM 9 subtle one, and I -- being that it's ten years since I 02:46PM 10 wrote this, I've forgotten that, but it's -- it's kind 02:46PM 11 of technical detail on LLDP that I can look up if you 02:46PM 12 want, but -- 02:46PM 13 MR. WONG: Maybe this will help you. 02:46PM 14 What's the next exhibit number? 02:46PM 15 THE REPORTER: 322. 02:47PM 16 (Exhibit 322 was marked for 02:47PM 17 identification by the Court Reporter.) 02:47PM 18 MR. WONG: The Court Reporter has marked, as 02:47PM 19 Exhibit 322, a document bearing Bates number, on the 02:47PM 20 front page, CSI-CLI-00291752, and the last page of this 02:47PM 21 document is CSI-CLI-00292238, and for clarity on the 02:47PM 22 record, this is not the complete document. The complete 02:47PM 23 document is over 500 pages long. This is excerpted 02:47PM 24 pages from this document produced by Cisco with just the 02:47PM 25 LLDP-related commands. 02:47PM</p> <p style="text-align: right;">Page 191</p>	<p>1 and I've not used it for a long time 02:48PM 2 But I think it's a request from the sender to the 02:49PM 3 receiver to hold neighbor information, at least for a 02:49PM 4 certain period of time, regardless of whether they get 02:49PM 5 utilized That's my understanding 02:49PM 6 BY MR WONG: 02:49PM 7 Q And how long, approximately, did it take you to 02:49PM 8 come up with the syntax for the "lldp holdtime" command? 02:49PM 9 MR CANNON: Objection; vague 02:49PM 10 THE WITNESS: The actual -- the command itself? 02:49PM 11 MR WONG: The actual -- yes, the syntax of the 02:49PM 12 command 02:49PM 13 MR CANNON: Objection; vague 02:49PM 14 THE WITNESS: 15 minutes 02:49PM 15 BY MR WONG: 02:49PM 16 Q Is your answer 15 minutes for all of the commands 02:49PM 17 listed in Exhibit 316? 02:49PM 18 A No 02:49PM 19 MR CANNON: Objection; compound and vague 02:49PM 20 MR WONG: I'm just trying to save time here, 02:49PM 21 Mr Patil 02:49PM 22 Q Okay What is the function performed by the 02:49PM 23 "lldp receive" command? 02:49PM 24 A Basically, we announce that we are open on the 02:49PM 25 receive channel for that interface 02:50PM</p> <p style="text-align: right;">Page 193</p>

1 Q And how long did it take for you to come up with 02:50PM	1 than 15 minutes for you to come up with the command 02:52PM
2 the syntax for that command? 02:50PM	2 syntax, setting aside the "lldp transmit" and "lldp 02:52PM
3 MR. CANNON: Objection; vague. 02:50PM	3 receive" commands. 02:52PM
4 THE WITNESS: Several hours because that's where 02:50PM	4 A Right. 02:52PM
5 we went back and forth on the extensibility, usability, 02:50PM	5 "tlv-select." Some of the org-specific ones 02:52PM
6 redundancy, verbosity, and those discussions. 02:50PM	6 are -- they are just basically the -- they -- they are 02:53PM
7 BY MR. WONG: 02:50PM	7 straight up describing what they are, so that shouldn't 02:53PM
8 Q What is the function performed by the "lldp 02:50PM	8 have been long. 02:53PM
9 reinit" command? 02:50PM	9 I would say "tlv-select," "transmit" and 02:53PM
10 A It specifies the amount of wait time for the 02:50PM	10 "receive," and maybe even "rate" command. Significant 02:53PM
11 protocol to reinitialize at any point in time. 02:50PM	11 thought process involved in -- in coming up with the 02:53PM
12 Q And how long did it take for you to come up with 02:50PM	12 right keywords. 02:53PM
13 the command syntax for the "lldp reinit" command? 02:50PM	13 Q I'm sorry, did you say "rate command"? 02:53PM
14 MR. CANNON: Objection; vague. 02:50PM	14 A Yeah, "lldp rate." 02:53PM
15 THE WITNESS: That's -- that one is in the 02:50PM	15 Q Oh, okay. So I'm looking at Exhibit 316, and I 02:53PM
16 15-minute category. 02:50PM	16 do not believe the "rate" command -- 02:53PM
17 BY MR. WONG: 02:50PM	17 A Oh, oh, I see -- 02:53PM
18 Q Did it also take you approximately 15 minutes to 02:51PM	18 Q -- is -- is part of that. 02:53PM
19 come up with the "lldp run" command? And I'm referring 02:51PM	19 A -- is part of that. Okay. I was looking at 322. 02:53PM
20 to the command syntax. 02:51PM	20 So among 316, I would say -- 02:53PM
21 MR. CANNON: Objection; vague. 02:51PM	21 Q Let me just ask the fresh question so that it's 02:53PM
22 THE WITNESS: "lldp run," yes. 02:51PM	22 clear -- 02:53PM
23 BY MR. WONG: 02:51PM	23 A Yes. 02:53PM
24 Q Did it also take you 15 minutes to come up with 02:51PM	24 Q -- on the record. 02:53PM
25 the syntax for "lldp timer"? 02:51PM	25 A Yes. 02:53PM
Page 194	Page 196
1 MR. CANNON: Objection; vague 02:51PM	1 Q So for the commands listed on Exhibit 316 -- 02:53PM
2 THE WITNESS: I don't know that one because I -- 02:51PM	2 A Yeah 02:53PM
3 I recall that some of these had a lot of discussion 02:51PM	3 Q -- which of the commands do you believe you spent 02:54PM
4 involved, and I -- I can clearly say that transmit and 02:51PM	4 more than 15 minutes on coming up with the command 02:54PM
5 receive fell into that category 02:51PM	5 syntax? 02:54PM
6 BY MR. WONG: 02:51PM	6 A "Transmit" and "receive," the "show" commands, 02:54PM
7 Q Of taking longer than 15 minutes? 02:51PM	7 "tlv-select" command, "lldp timer" command, and "lldp 02:54PM
8 A Longer time, longer than 15 minutes 02:51PM	8 reinit" command 02:54PM
9 Q For the other commands listed on Exhibit 316 that 02:51PM	9 Q Approximately how long do you think it took you 02:54PM
10 are not the "lldp transmit" and "lldp receive" 02:51PM	10 to come up with the command syntax for the "lldp reinit" 02:54PM
11 commands -- 02:51PM	11 command? 02:54PM
12 A Mm-hmm 02:51PM	12 MR. CANNON: Objection; vague 02:54PM
13 Q -- do you believe that you spent approximately 02:52PM	13 THE WITNESS: I struggled with it I'm not 02:54PM
14 15 minutes coming up with the command syntax for each of 02:52PM	14 particularly happy with the way it is right -- right 02:54PM
15 those? 02:52PM	15 here Reading it is kind of a, for lack of a better 02:54PM
16 MR. CANNON: Objection; vague and compound 02:52PM	16 term, awkward keyword, but I didn't have anything better 02:55PM
17 THE WITNESS: I would say a good 50 percent of 02:52PM	17 to say -- to use there, so I might have struggled with 02:55PM
18 those, but some of the commands I struggle with myself 02:52PM	18 it for 45 minutes 02:55PM
19 to -- to put out the best initial proposal, so not 02:52PM	19 BY MR. WONG: 02:55PM
20 everything is 15 minutes Some of them took where I 02:52PM	20 Q But do you have an actual memory of spending 02:55PM
21 went back and looked at other things and see what's the 02:52PM	21 45 minutes on this command? 02:55PM
22 most usable token to put there and a keyword to put 02:52PM	22 A Yes 02:55PM
23 there 02:52PM	23 Q Okay 02:55PM
24 BY MR. WONG: 02:52PM	24 A I mean, I had something else before, and I took 02:55PM
25 Q Which of the commands do you think took longer 02:52PM	25 it out and rewired the code and etc , yeah 02:55PM
Page 195	Page 197

1 Q When -- 03:42PM	1 I to both of you 03:44PM
2 A Actually, I'm sorry, I take that back. I do have 03:42PM	2 MR WONG: Thank you 03:44PM
3 a legal certificate -- I used to have a legal 03:42PM	3 THE VIDEOGRAPHER: We are off the record at 03:44PM
4 certification. 03:42PM	4 3:45 p m This concludes today's testimony given by 03:44PM
5 Q What kind of legal certi- -- certification did 03:42PM	5 Devadas Patil The total number of media used was four 03:44PM
6 you have? 03:42PM	6 and will be retained by Veritext LLC 03:44PM
7 A I had a Series 63 at one point. 03:42PM	7 (TIME NOTED: 3:44 P M)
8 Q Do you have any training in intellectual property 03:42PM	8
9 law? 03:42PM	9
10 A No. 03:42PM	10
11 Q Did you analyze intellectual property issues when 03:42PM	11
12 you were writing your master's thesis at MIT? 03:42PM	12
13 A No. 03:42PM	13
14 Q Have you reviewed any of Cisco's patents related 03:42PM	14
15 to SysDB? 03:42PM	15
16 A Related to SysDB, I might have glossed over a 03:42PM	16
17 couple of them, but I've not reviewed them in detail. 03:42PM	17
18 Q Are you aware that the administrative law judge 03:42PM	18
19 in an International Trade Commission investigation has 03:42PM	19
20 found that Arista's EOS software infringes Cisco patents 03:42PM	20
21 related to SysDB? 03:42PM	21
22 MR. WONG: Object to the form of the question. 03:43PM	22
23 THE WITNESS: I'm now aware of it, but not before 03:43PM	23
24 a few days ago. 03:43PM	24
25 BY MR. CANNON: 03:43PM	25
Page 230	Page 232
1 Q So you were not aware of that when you wrote your 03:43PM	1 I declare under penalty of perjury
2 master's thesis? 03:43PM	2 under the laws that the foregoing is
3 A No. 03:43PM	3 true and correct.
4 Q Last bit. 03:43PM	4
5 Earlier, do you remember talking about how you 03:43PM	5 Executed on _____, 20____,
6 weren't particularly happy sitting here today with the 03:43PM	6 at _____,
7 "lldp reinit" command? 03:43PM	7
8 A Yes. 03:43PM	8
9 Q Why aren't you happy about that, sitting here 03:43PM	9
10 today? 03:43PM	10
11 A It's not about just today. I was not happy to 03:43PM	11
12 begin with it -- to begin with, because I struggled with 03:43PM	12 DEVADAS PATIL
13 it a lot, and I couldn't come up with a nice term to 03:43PM	13
14 mean reinit, reinitialize, and, yeah, that was the 03:43PM	14
15 source of my dissatisfaction with it. 03:43PM	15
16 Q Do you recall alternatives to "reinit" that you 03:43PM	16
17 considered at the time? 03:43PM	17
18 A I -- like I said, I spent 45 minutes on it, and 03:44PM	18
19 that's the best I could come up with, and given the time 03:44PM	19
20 pressure, I had to propose it and move with it. 03:44PM	20
21 MR. CANNON: Nothing further for me right now. 03:44PM	21
22 MR. WONG: We're done. 03:44PM	22
23 THE WITNESS: Great. 03:44PM	23
24 MR. CANNON: Thank you very much. 03:44PM	24
25 THE WITNESS: Not a problem. I hope it is useful 03:44PM	25
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CONFIDENTIAL

1 I, the undersigned, a Certified Shorthand
2 Reporter of the State of California, do hereby certify:
3 That the foregoing proceedings were taken before
4 me at the time and place herein set forth; that any
5 witnesses in the foregoing proceedings, prior to
6 testifying, were placed under oath; that a verbatim
7 record of the proceedings was made by me using machine
8 shorthand which was thereafter transcribed under my
9 direction; further, that the foregoing is an accurate
10 transcription thereof.

11 I further certify that I am neither financially
12 interested in the action nor a relative or employee of
13 any attorney or any of the parties.

14 IN WITNESS WHEREOF, I have this date subscribed
15 my name.

16 Dated: March 2, 2016

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RACHEL FERRIER

22 CSR No. 6948

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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

CISCO SYSTEMS, INC. Case No.: 5:14-cv-05344-BLF (PSG)

Plaintiff,

v.

ARISTA NETWORKS, INC.

Defendants.

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VIDEOTAPED DEPOSITION OF PHILLIP REMAKER

30(b)(6) FOR CISCO SYSTEMS, INC.

Palo Alto, California

Thursday, March 31, 2016

Volume 1

Reported by:

LESLIE JOHNSON

RPR, CSR No. 11451

Job No.: 2281749

PAGES 1 - 216

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<p>1 UNITED STATES DISTRICT COURT 2 FOR THE NORTHERN DISTRICT OF CALIFORNIA 3 SAN JOSE DIVISION 4 5 CISCO SYSTEMS, INC Case No : 5:14-cv-05344-BLF(PSG) 6 7 Plaintiff, 8 9 v 10 11 ARISTA NETWORKS, INC 12 13 Defendants 14 15 * HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY * 16 17 VIDEOTAPED DEPOSITION OF PHILLIP REMAKER, Volume 1, 18 taken on behalf of Defendant, at 601 California Avenue, 19 Palo Alto, California, beginning at 9:30 a m and ending 20 at 4:14 p m, on Thursday, March 31, 2016, before 21 LESLIE JOHNSON, Certified Shorthand Reporter No 11451 22 23 24 25</p> <p style="text-align: right;">Page 2</p>	<p>1 I N D E X 2 3 WITNESS EXAMINATION 4 PHILLIP REMAKER 5 30(b)(6) for CISCO SYSTEMS 6 Volume 1 7 BY MR. WONG 8 8 BY MR. NEUKOM 212 9 10 EXHIBITS 11 PHILLIP REMAKER, 30(b)(6) 12 NUMBER DESCRIPTION PAGE 13 Exhibit 429 Defendant Arista Network, Inc.'s 14 Notice of 30(b)(6) Deposition of 15 Plaintiff Cisco Systems, Inc.; 16 33 pages 17 18 Exhibit 430 Amended Exhibit F Document Index; 11 19 40 pages 20 Exhibit 431 Amended Exhibit F; 44 pages 14 21 Exhibit 432 Binder labeled "Bates Does Cited 15 22 in Cisco Rog Exhibit F," Volume 1 23 of 2 24 Exhibit 433 Binder labeled "Bates Does Cited 15 25 in Cisco Rog Exhibit F," Volume 2 of 2 Exhibit 434 Binder labeled "Source Code Cited 15 in Cisco Rog Exhibit F," Volume 1 of 2 Exhibit 435 Binder labeled "Source Code Cited 15 in Cisco Rog Exhibit F," Volume 2 of 2 Page 4</p>
<p>1 APPEARANCES: 2 3 FOR PLAINTIFF CISCO SYSTEMS, INC.: 4 QUINN EMANUEL URQUHART & SULLIVAN LLP 5 BY: JOHN (JAY) NEUKOM, ESQ. 6 50 California Street, 22nd Floor 7 San Francisco, California 94111 8 (415)875-6600 9 johmneukom@quinnemanuel.com 10 FOR DEFENDANT ARISTA NETWORKS, INC.: 11 KEKER & VAN NEST LLP 12 BY: RYAN WONG, ESQ. 13 633 Battery Street 14 San Francisco, California 94111 15 (415)391-5400 16 rwong@kvn.com 17 ALSO PRESENT: 18 SEAN GRANT, Videographer 19 20 21 22 23 24 25</p> <p style="text-align: right;">Page 3</p>	<p>1 EXHIBITS (Cont) 2 PHILLIP REMAKER, 30(b)(6) 3 NUMBER DESCRIPTION PAGE 4 Exhibit 436 E-mail dated 1/12/99 from Phillip 40 5 Remaker to Carl Schaefer, et al ; 6 Bates stamped CSI-CLI-00794351 to 95 7 Exhibit 437 E-mail dated 6/7/2003 from Shaubin 80 8 Xie; Bates stamped CSI-CLI-00783473 9 to 81 10 Exhibit 438 Parser-Police Manifesto, version 6; 82 11 10 pages 12 13 Exhibit 439 CLI Design and Review Guide: Bates 85 14 stamped CSI-CLI-02824651 to 719 15 Exhibit 440 E-mail thread, top e-mail dated 87 16 7/8/2005, from Jain Dhanendra; Bates 17 stamped CSI-CLI-00807444 to 68 18 Exhibit 441 Interrogatory No 2 First Supplemental 98 19 Response - Exhibit C; 3 pages 20 21 Exhibit 442 Document entitled "Show Inventory 104 22 Command"; Bates stamped CSI-CLI-610102 23 to 610105 24 25 Exhibit 443 E-mail dated 12/6/2002 from Eric 114 Osborne; Bates stamped CSI-CLI-777457 to 459 Exhibit 444 Interrogatory No 2 First Supplemental 122 Response - Exhibit B; 102 pages Exhibit 445 E-mail dated 25 June 2002 from Ilse 151 Van Hoeck; Bates stamped CSI-CLI-00608702 to 703 Exhibit 446 E-mail dated 17 May 1999 from Linning 159 Wei; Bates stamped CSI-CLI-60866 Page 5</p>

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<p>1 EXHIBITS (Cont.)</p> <p>2 PHILLIP REMAKER, 30(b)(6)</p> <p>3 NUMBER DESCRIPTION PAGE</p> <p>4 Exhibit 447 Plaintiff Cisco Systems, Inc.'s Seventh 164</p> <p>5 Supplemental Objections and Responses</p> <p>6 to Defendant Arista Network, Inc.'s</p> <p>7 Second Set of Interrogatories</p> <p>8 (No. 16); 50 pages</p> <p>9 Exhibit 448 Plaintiff Cisco System, Inc.'s Fourth 167</p> <p>10 Supplemental Objections and Responses</p> <p>11 to Defendant Arista Network, Inc.'s</p> <p>12 First Set of Interrogatories (2 and 5);</p> <p>13 44 pages</p> <p>14 Exhibit 449 Cisco's Response to Arista's 182</p> <p>15 Interrogatory No. 16 Amended Exhibit</p> <p>16 D1 (IOS Release 11.0); 28 pages</p> <p>17 Exhibit 450 Exhibit E Exemplary Copying of Command 201</p> <p>18 Responses; 27 pages</p> <p>19 Exhibit 451 Writing Command Line Interfaces (CLI) 204</p> <p>20 and CLI Output; Bates stamped</p> <p>21 CSI-CLI-02607986 to 8010</p> <p>22 ***</p> <p>23</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 6</p>	<p>1 plaintiff.</p> <p>2 THE VIDEOGRAPHER: Thank you. Will the</p> <p>3 certified court reporter please swear in the</p> <p>4 witness.</p> <p>5</p> <p>6 PHILLIP REMAKER,</p> <p>7 having been first duly sworn, was examined</p> <p>8 and testified as follows:</p> <p>9</p> <p>10 EXAMINATION</p> <p>11 BY MR. WONG:</p> <p>12 Q. Good morning, Mr. Remaker.</p> <p>13 A. Good morning.</p> <p>14 Q. Do you understand that you are testifying</p> <p>15 under oath?</p> <p>16 A. I understand.</p> <p>17 Q. Okay. And I know we took your personal</p> <p>18 deposition yesterday. Do you understand that the</p> <p>19 general rules for conducting a deposition are also</p> <p>20 applicable today?</p> <p>21 A. Yes.</p> <p>22 Q. Do you understand that you have been</p> <p>23 designated by Plaintiff Cisco to provide corporate</p> <p>24 testimony under Rule 30(b)(6) today?</p> <p>25 A. Yes.</p> <p style="text-align: right;">Page 8</p>
<p>1 Palo Alto, California, Thursday, March 31, 2016</p> <p>2 9:30 a.m.</p> <p>3</p> <p>4 THE VIDEOGRAPHER: Good morning. We're on</p> <p>5 the record. The time is 9:30 a.m. and the date is</p> <p>6 March 31st, 2016. This begins the videotaped</p> <p>7 deposition of Cisco Systems, Inc. pursuant to Rule</p> <p>8 30(b)(6). My name is Sean Grant, here with our</p> <p>9 court reporter, Leslie Johnson. We're here from</p> <p>10 Veritext Legal Solutions at the request of counsel</p> <p>11 for Defendant. This deposition is being held at</p> <p>12 Wilson Sonsini in Palo Alto, California.</p> <p>13 The caption of this case is Cisco Systems</p> <p>14 Inc. versus Arista Networks, Inc., Case No.</p> <p>15 5:14-cv-05344-BLF.</p> <p>16 Please note that audio and video recording</p> <p>17 will take place unless all parties have agreed to go</p> <p>18 off the record. Microphones are sensitive and may</p> <p>19 pick up whispers, private conversations or cellular</p> <p>20 interference.</p> <p>21 At this time, will counsel please identify</p> <p>22 themselves and state whom they represent.</p> <p>23 MR. WONG: Ryan Wong from Keker & Van Nest</p> <p>24 for Defendant Arista Networks.</p> <p>25 MR. NEUKOM: John Neukom for the</p> <p style="text-align: right;">Page 7</p>	<p>1 (Exhibit 429 marked for identification.)</p> <p>2 MR. WONG: Let's mark this as the first</p> <p>3 deposition exhibit. I believe we are on 429.</p> <p>4 THE REPORTER: Correct.</p> <p>5 BY MR. WONG:</p> <p>6 Q. The court reporter has marked Exhibit 429,</p> <p>7 a document that on its face says "Defendant Arista</p> <p>8 Network, Inc.'s Notice of Rule 30(b)(6) Deposition</p> <p>9 of Plaintiff Cisco Systems, Inc."</p> <p>10 Mr. Remaker, do you recognize the document</p> <p>11 marked as Exhibit 429?</p> <p>12 MR. NEUKOM: It might help you to turn to</p> <p>13 page 23.</p> <p>14 MR. WONG: Thank you, Counsel.</p> <p>15 MR. NEUKOM: Start with paragraph 78.</p> <p>16 THE WITNESS: Yes, I recognize this</p> <p>17 document.</p> <p>18 BY MR. WONG:</p> <p>19 Q. Do you understand that you have been</p> <p>20 designated by Cisco to provide corporate testimony</p> <p>21 for topic No. 78 that appears on page 23 of</p> <p>22 Exhibit 429?</p> <p>23 A. Yes.</p> <p>24 Q. Do you understand that you've been</p> <p>25 designated by Cisco to provide corporate testimony</p> <p style="text-align: right;">Page 9</p>

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<p>1 answered.</p> <p>2 THE WITNESS: Cisco trusts the engineers</p> <p>3 that they hired that are experts in the topic.</p> <p>4 BY MR. WONG:</p> <p>5 Q. Mr. Remaker, did you review any deposition</p> <p>6 testimony provided in this case to prepare for this</p> <p>7 corporate deposition?</p> <p>8 A. Yes.</p> <p>9 Q. Did you review the deposition transcript</p> <p>10 of Mr. Patel?</p> <p>11 A. I did not.</p> <p>12 Q. In the process of adding a new CLI command</p> <p>13 to a Cisco operating system, is there a preferred or</p> <p>14 best practice development approach that are followed</p> <p>15 by Cisco engineers?</p> <p>16 MR. NEUKOM: Objection. Asked and</p> <p>17 answered. Also vague and compound.</p> <p>18 THE WITNESS: Is there a best practice</p> <p>19 for?</p> <p>20 BY MR. WONG:</p> <p>21 Q. The development of and creation of a new</p> <p>22 CLI command to be added to the operating system?</p> <p>23 And let me just give you some context.</p> <p>24 Mr. Patel testified about a five-stage</p> <p>25 development process for adding new features to the</p> <p style="text-align: right;">Page 154</p>	<p>1 group, the Parser Police mailing list, and any other</p> <p>2 related mailing lists run by individual</p> <p>3 organizations.</p> <p>4 Q. Anything else?</p> <p>5 A. Nothing I can think of off the top of my</p> <p>6 head.</p> <p>7 Q. Is customer feedback a potential resource</p> <p>8 for an employee who is creating a new CLI command?</p> <p>9 MR. NEUKOM: Objection. The question</p> <p>10 phrased in a hypothetical.</p> <p>11 THE WITNESS: Customer feedback may be</p> <p>12 used in the creation of a new CLI command.</p> <p>13 BY MR. WONG:</p> <p>14 Q. Are industry standards resources that may</p> <p>15 be used by Cisco employees to create CLI commands?</p> <p>16 MR. NEUKOM: Objection. Vague. Calls for</p> <p>17 a legal solution.</p> <p>18 THE WITNESS: Development engineers may</p> <p>19 use standards in the preparation of CLI commands.</p> <p>20 BY MR. WONG:</p> <p>21 Q. And that includes IEEE standards, correct.</p> <p>22 MR. NEUKOM: Objection. Vague and</p> <p>23 compound.</p> <p>24 THE WITNESS: That is my understanding.</p> <p>25 ////</p> <p style="text-align: right;">Page 156</p>
<p>1 Cisco's CLI and described how proposing the new CLI</p> <p>2 commands for those features, what stages those were</p> <p>3 done in.</p> <p>4 A. Okay.</p> <p>5 Q. And he testified that he thought this was</p> <p>6 called the waterfall approach. I wasn't familiar</p> <p>7 with that, but he described it as a five-stage</p> <p>8 approach to development.</p> <p>9 So my question to you is: Is there a</p> <p>10 preferred approach at Cisco to come up with new CLI</p> <p>11 commands in the process of adding new functionality</p> <p>12 to Cisco's devices?</p> <p>13 A. The best practices may vary by individual</p> <p>14 development group.</p> <p>15 Q. So you would have to look at each</p> <p>16 development group to see whether there is a best</p> <p>17 practice to coming up with a new CLI command; is</p> <p>18 that right?</p> <p>19 A. I would have to look at each individual</p> <p>20 development group.</p> <p>21 Q. What resources are available for an</p> <p>22 engineer to consult when coming up with a new CLI</p> <p>23 command?</p> <p>24 A. The resources include specific documents</p> <p>25 in the development process for each individual</p> <p style="text-align: right;">Page 155</p>	<p>1 BY MR. WONG:</p> <p>2 Q. That could also include IETF standards,</p> <p>3 correct?</p> <p>4 A. That is my understanding.</p> <p>5 Q. And is the existing command set in the</p> <p>6 Cisco CLI another resource that an engineer may</p> <p>7 consult when coming up with a new CLI command?</p> <p>8 MR. NEUKOM: Objection. Vague and</p> <p>9 compound.</p> <p>10 THE WITNESS: Are you saying can they look</p> <p>11 at the existing code to develop new code?</p> <p>12 BY MR. WONG:</p> <p>13 Q. Uh-huh.</p> <p>14 A. Yes.</p> <p>15 Q. Are there any resources that a Cisco</p> <p>16 engineer is not allowed to consult when coming up</p> <p>17 with a new command syntax?</p> <p>18 A. Beyond what they're not allowed to consult</p> <p>19 with in general, based on the terms of employment,</p> <p>20 I'm not aware of any specific restrictions.</p> <p>21 Q. Are Cisco employees free to rely upon</p> <p>22 their own experiences working with non-Cisco CLI's</p> <p>23 when coming up with new CLI commands for Cisco IOS?</p> <p>24 MR. NEUKOM: Objection. Vague.</p> <p>25 Hypothetical.</p> <p style="text-align: right;">Page 157</p>

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<p>1 estimate for us the number of documents -- the</p> <p>2 number of historical Cisco documents you reviewed to</p> <p>3 prepare yourself to testify today as a corporate</p> <p>4 representative?</p> <p>5 A. Easily 60 to 100 documents.</p> <p>6 Q. And can you describe by category what</p> <p>7 sorts of documents you reviewed to prepare yourself</p> <p>8 to come testify today about the historical</p> <p>9 origination of Cisco command line expressions?</p> <p>10 A. Individual command specifications written</p> <p>11 by engineers, source code, some e-mails, some</p> <p>12 internal web pages, and the deposition of Kirk</p> <p>13 Loughheed.</p> <p>14 Q. Do you believe there is anybody within</p> <p>15 Cisco who knows more about the historical creation</p> <p>16 of the 500-plus command line expressions identified</p> <p>17 in Exhibit 431, other than you?</p> <p>18 A. No.</p> <p>19 MR. NEUKOM: Thanks very much.</p> <p>20 MR. WONG: Thank you.</p> <p>21 THE VIDEOGRAPHER: This concludes today's</p> <p>22 videotaped deposition of Cisco Systems, Inc.</p> <p>23 pursuant to Rule 30(b)(6).</p> <p>24 We're off the record at 4:14 p m.</p> <p>25 (TIME NOTED: 4:14 p m.)</p> <p style="text-align: right;">Page 214</p>	<p>1 REPORTER'S CERTIFICATION</p> <p>2</p> <p>3 I, Leslie Johnson, a Certified Shorthand</p> <p>4 Reporter of the State of California, do hereby certify:</p> <p>5 That the foregoing proceedings were taken</p> <p>6 before me at the time and place herein set forth; that</p> <p>7 any witnesses in the foregoing proceedings, prior to</p> <p>8 testifying, were administered an oath; that a record of</p> <p>9 the proceedings was made by me using machine shorthand</p> <p>10 which was thereafter transcribed under my direction;</p> <p>11 that the foregoing transcript is a true record of the</p> <p>12 testimony given.</p> <p>13 Further, that if the foregoing pertains to</p> <p>14 the original transcript of a deposition in a Federal</p> <p>15 Case, before completion of the proceedings, review</p> <p>16 of the transcript [] was [] was not requested.</p> <p>17 I further certify I am neither financially interested in</p> <p>18 the action nor a relative or employee of any attorney or</p> <p>19 any party to this action.</p> <p>20 IN WITNESS WHEREOF, I have this date</p> <p>21 subscribed my name.</p> <p>22 Dated: April 15, 2016</p> <p>23</p> <p>24 <%signature%></p> <p>25 LESLIE JOHNSON CSR No. 11451, RPR, CCRP</p> <p style="text-align: right;">Page 216</p>
<p>1 DECLARATION UNDER PENALTY OF PERJURY</p> <p>2</p> <p>3 I, PHILLIP REMAKER, the witness herein,</p> <p>4 declare under penalty of perjury that I have read the</p> <p>5 foregoing in its entirety; and that the testimony</p> <p>6 contained therein, as corrected by me, is a true and</p> <p>7 accurate transcription of my testimony elicited at said</p> <p>8 time and place.</p> <p>9</p> <p>10 Executed this ____ day of _____ 2016, at</p> <p>11 _____,</p> <p>12 (City) (State)</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18 _____</p> <p>19 PHILLIP REMAKER</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 215</p>	

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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

ATTORNEYS' EYES ONLY - HIGHLY CONFIDENTIAL

VIDEOTAPED DEPOSITION OF ABHAY ROY

Palo Alto, California

Friday, December 18, 2015

Volume 1

Case 5:14-cv-05344-BLF Document 512-8 Filed 09/06/16 Page 101 of 122
HIGHLY CONFIDENTIAL- ATTORNEYS' EYES ONLY

<p>1 UNITED STATES DISTRICT COURT 2 NORTHERN DISTRICT OF CALIFORNIA 3 SAN JOSE DIVISION 4 5 _____ 6 CISCO SYSTEMS, INC.,) 7 Plaintiff,) 8 vs.)Case No.: 9 ARISTA NETWORKS, INC.,)5:14-cv-05344-BLF(PSG) 10 Defendant.) 11 _____ 12 13 VIDEOTAPED DEPOSITION OF ABHAY ROY, VOLUME 1, 14 taken on behalf of the Defendant, at Wilson Sonsini 15 Goodrich & Rosati, 601 California Avenue, Palo Alto, 16 California, beginning at 9:30 a.m. and ending at 17 4:47 p.m. on Friday, December 18, 2015, before 18 RACHEL FERRIER, Certified Shorthand Reporter No. 6948. 19 20 21 22 23 24 25</p>	<p>1 APPEARANCES (continued): 2 3 For Defendant ARISTA NETWORKS, INC.: 4 KEKER & VAN NEST, LLP 5 BY: DAVID J. SILBERT 6 ELIZABETH K. McCLOSKEY 7 Attorneys at Law 8 633 Battery Street 9 San Francisco, CA 94111 10 415.676.2269 11 dsilbert@kvn.com 12 emccloskey@kvn.com 13 14 Videographer: 15 CASSIA LEET 16 17 18 19 20 21 22 23 24 25</p>
Page 2	Page 4
<p>1 APPEARANCES: 2 3 For Plaintiff CISCO SYSTEMS, INC., and the Witness: 4 QUINN EMANUEL URQUHART & SULLIVAN LLP 5 BY: JOHN M. NEUKOM 6 Attorney at Law 7 50 California Street, 22nd Floor 8 San Francisco, CA 94111 9 415.875.6320 10 johnneukom@quinnemanuel.com 11 and 12 QUINN EMANUEL URQUHART & SULLIVAN LLP 13 BY: SIDNEY ARCHIBALD 14 Attorney at Law 15 555 Twin Dolphin Drive, 5th Floor 16 Redwood Shores, CA 94065 17 650.801.5000 18 sydneyarchibald@quinnemanuel.com 19 20 21 22 23 24 25</p>	<p>1 INDEX 2 WITNESS EXAMINATION 3 ABHAY ROY 4 VOLUME 1 5 6 BY MR SILBERT 10, 87, 219 7 8 9 EXHIBITS 10 NUMBER DESCRIPTION PAGE 11 Exhibit 51 LinkedIn Profile for Abhay Roy 11 12 13 Exhibit 52 Cisco IOS Master Command List, All Releases 18 14 Exhibit 53 CLI Design and Review Guide 15 (Bates CSI-ANI-00073381 - 00073381 000014) 40 16 17 Exhibit 54 Cisco's Third Supplemental Response to Interrogatory No 16 and Response to 18 Interrogatory No 19 Amended Exhibit F 57 19 20 Exhibit 55 Bidirectional Forwarding Detection (BFD) for IPv4 and IPv6 (Single Hop) 21 (Bates ARISTANDCA00030805 - 00030811) 61 22 23 Exhibit 56 The OSPF Specification (Bates ARISTANDCA00022597 - 00022703) 80 24 25</p>
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<p>1 EXHIBITS</p> <p>2 NUMBER DESCRIPTION PAGE</p> <p>3 Exhibit 57 Bidirectional Forwarding Detection (BFD)</p> <p>4 (Bates ARISTANDCA00030756 - 00030804) 99</p> <p>5</p> <p>6 Exhibit 58 Internet Protocol, Version 6 (IPv6) Specification</p> <p>7 (Bates ARISTANDCA00025710 - 00025746) 105</p> <p>8</p> <p>9 Exhibit 59 OSPF Commands: ip ospf fast-reroute per-prefix through R 130</p> <p>10</p> <p>11 Exhibit 60 CSCdi42640 (Bates CSI-CLI-01542004) 137</p> <p>12 Exhibit 61 CSCdj76740 140</p> <p>13 Exhibit 62 CSCdj76740 140</p> <p>14 Exhibit 63 Screen shot of a webpage titled "Do you have knowledge of IPR in draft-ietf-isis-mi" 169</p> <p>15</p> <p>16</p> <p>17 Exhibit 64 Screen shot of a webpage titled "Re:[68ATTENDEES] RFC Author License Execution Opportunity" 171</p> <p>18</p> <p>19 Exhibit 65 E-mail chain dated 11/23/15 to Leo Boulton, et al , from Brian Jackson (Bates CSI-CLI-01477442 - 01477448) 179</p> <p>20</p> <p>21</p> <p>22 Exhibit 66 E-mail chain dated 9/8/15 from Umesh Dudani to Abhay Roy (Bates CSI-CLI-01438733 - 01438743) 193</p> <p>23</p> <p>24</p> <p>25</p> <p>Page 6</p>	<p>1 INDEX (Continued):</p> <p>2 PREVIOUSLY MARKED EXHIBITS</p> <p>3 EXHIBIT PAGE</p> <p>4 29 75</p> <p>5 (Retained by Counsel)</p> <p>6</p> <p>7 INSTRUCTION NOT TO ANSWER</p> <p>8 Page Line</p> <p>9 57 23</p> <p>10</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p>Page 8</p>
<p>1 EXHIBITS</p> <p>2 NUMBER DESCRIPTION PAGE</p> <p>3 Exhibit 67 E-mail chain dated 7/3/13 from Vittal Krishnamurthy to Pranav Mehta, et al (Bates CSI-CLI-01483915 - 01483921) 201</p> <p>4</p> <p>5</p> <p>6 Exhibit 68 E-mail chain dated 9/16/15 from Shane Corban to Yong Hu, et al (Bates CSI-CLI-01440122 - 01440128) 204</p> <p>7</p> <p>8</p> <p>9 Exhibit 69 OSPFv3 support in IOS Software Unit Functional Specification (Bates CSI-CLI-00609752 - 00609769) 219</p> <p>10</p> <p>11</p> <p>12 Exhibit 70 Support of BFD in OSPFv2 Functional Specification (Bates CSI-CLI-00610401 - 00610409) 219</p> <p>13</p> <p>14</p> <p>15 Exhibit 71 CSCdk33792 219</p> <p>16</p> <p>17 Exhibit 72 CSCdk33792 219</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p>Page 7</p>	<p>1 Palo Alto, California; Friday, December 18, 2015</p> <p>2 9:30 a m</p> <p>3 09:30AM</p> <p>4 THE VIDEOGRAPHER: Good morning We are on the 09:30AM</p> <p>5 record at 9:30 a m on December 18th, 2015 09:30AM</p> <p>6 This is the video-recorded deposition of 09:30AM</p> <p>7 Abhay Roy 09:30AM</p> <p>8 My name is Cassia Leet, here with our Court 09:30AM</p> <p>9 Reporter, Rachel Ferrier We are here from Veritext 09:30AM</p> <p>10 Legal Solutions at the request of counsel for the 09:30AM</p> <p>11 defendant 09:30AM</p> <p>12 This deposition is being held at 601 California 09:30AM</p> <p>13 Avenue, Palo Alto, California 94304 09:30AM</p> <p>14 The caption of this case is Cisco Systems, Inc , 09:31AM</p> <p>15 versus Arista Networks, Inc , in the United States 09:31AM</p> <p>16 District Court, Northern District of California, 09:31AM</p> <p>17 San Jose Division, Case No 5:14-cv-05344-BLF (PSG) 09:31AM</p> <p>18 Please note that the audio and video recording 09:31AM</p> <p>19 will take place unless all parties agree to go off the 09:31AM</p> <p>20 record Microphones are sensitive and may pick up 09:31AM</p> <p>21 whispers and private conversations 09:31AM</p> <p>22 I am not related to any party in this action, nor 09:31AM</p> <p>23 am I financially interested in the outcome in any way 09:31AM</p> <p>24 If there are any objections to the proceeding, 09:31AM</p> <p>25 please state them at the time of your appearance, 09:31AM</p> <p>Page 9</p>

1 Q And -- do you know the general dates? 11:11AM	1 be used by any pair of systems communicating via IPv4 11:14AM
2 A Yeah, I mean, I'll be completely widely 11:11AM	2 and/or IPv6 across a single IP hop that is associated 11:14AM
3 speculating, so I would rather not 11:12AM	3 with an incoming interface." 11:14AM
4 Q Okay Do you have any knowledge of when Mr Ward 11:12AM	4 Do you see that language? 11:14AM
5 worked at Cisco? 11:12AM	5 A Yes, I see that. 11:14AM
6 A Same thing 11:12AM	6 Q Under the BFD standard, is BFD enabled for a 11:14AM
7 Q Okay At the time Exhibit 55 was published. 11:12AM	7 specific interface? 11:15AM
8 they -- both Mr Katz and Mr Ward worked at Juniper 11:12AM	8 MR. NEUKOM: Objection; vague, calls for opinion 11:15AM
9 Networks; is that right? 11:12AM	9 testimony. 11:15AM
10 A Yes That's what this -- that's what this 11:12AM	10 THE WITNESS: So I don't remember the complete 11:15AM
11 document is telling us -- 11:12AM	11 details of the document. My closest recollection is the 11:15AM
12 Q Okay 11:12AM	12 specified -- as -- the line you just quoted, it is a 11:15AM
13 A -- that is rendered, yes 11:12AM	13 technology where two devices on a single interface can 11:15AM
14 Q And Juniper Networks is a competitor of Cisco; 11:12AM	14 detect each other in a faster way. 11:15AM
15 correct? 11:12AM	15 BY MR. SILBERT: 11:15AM
16 A Yes Juniper makes routers and switches 11:12AM	16 Q Okay. Sorry to jump around on you, but I'm going 11:15AM
17 Q Okay If you look at the title of the document, 11:12AM	17 to do this -- I'm going to warn you, I'm going to do 11:15AM
18 it says "Bidirectional Forwarding Detection (BFD)" 11:12AM	18 this some today. 11:15AM
19 Do you see that? 11:13AM	19 Could you look back at Exhibit 54 -- or, 11:15AM
20 A Yes, I see that 11:13AM	20 actually, strike that. That's okay. 11:16AM
21 Q Is the acronym BFD one that's commonly used in 11:13AM	21 What -- what is the function of the 11:16AM
22 the industry? 11:13AM	22 "bfd all-interfaces" command in Cisco IOS? 11:16AM
23 MR NEUKOM: Objection; foundation, calls for 11:13AM	23 A So BFD -- I mean, this is a slightly longer 11:16AM
24 opinion testimony 11:13AM	24 answer, so BFD -- we just looked at the spec. This is 11:16AM
25 THE WITNESS: So if you stay in the scope of this 11:13AM	25 the technology where, on a per-interface basis between 11:16AM
Page 66	Page 68
1 document, the primary purpose, as I was answering 11:13AM	1 two devices, you can set up this functionality to detect 11:16AM
2 earlier, is for the reader to understand this document 11:13AM	2 whoever goes down faster, right? 11:16AM
3 and refer to -- to BFD as -- as a acronym versus saying 11:13AM	3 When we ship this technology to our customers, 11:16AM
4 or fully spelling out Bidirectional Forwarding 11:13AM	4 what we realized is they have a lot of such interfaces, 11:16AM
5 Detection. That's the purpose in this document. 11:13AM	5 and if you had, let's say, a hundred interfaces, it was 11:16AM
6 Now, as far as the industry is concerned, I have 11:13AM	6 quite cumbersome to go and configure, on each interface. 11:16AM
7 no idea what people want to call it, but the correct 11:13AM	7 that I really want to protect myself; I really want BFD 11:16AM
8 thing to call it would be the full name, which is the 11:13AM	8 enabled 11:17AM
9 technology, which is Bidirectional Forwarding Detection. 11:13AM	9 So what we came up with is: What if we gave you 11:17AM
10 People could abbreviate and say all sorts of things, 11:13AM	10 a shorthand which you can configure at a higher 11:17AM
11 detection using bidirectional checks or doing all sorts 11:13AM	11 construct? 11:17AM
12 of things, so variety of options possible. 11:14AM	12 So the example I was giving earlier is, in 11:17AM
13 MR. SILBERT: Okay. But fair enough. 11:14AM	13 OSPF -- OSPF Version 3, in the router context -- not in 11:17AM
14 Q But you agree that the acronym BFD, to refer to 11:14AM	14 the interface context, in the router context -- you can 11:17AM
15 Bidirectional Forwarding Detection, appears in 11:14AM	15 go and say, BFD, please configure for all interfaces 11:17AM
16 Exhibit 55? 11:14AM	16 And that simplifies the operational aspect, and 11:17AM
17 A Yes, that is correct. I see that. 11:14AM	17 customers can now just do this versus having to go to 11:17AM
18 Q Yeah. Okay. 11:14AM	18 each interface and enabling one at a time, so that's the 11:17AM
19 Would you please turn to the second page of the 11:14AM	19 primary intent based on the feedback we got 11:17AM
20 document under Section 2, and I'm looking at the 11:14AM	20 Q Okay And so just to make sure that I 11:17AM
21 section -- Section 2 with the heading "Applications and 11:14AM	21 understand, the "bfd all-interfaces" command enables BFD 11:17AM
22 Limitations." 11:14AM	22 for all interfaces; is that correct? 11:17AM
23 Do you see that? 11:14AM	23 MR NEUKOM: Objection; misstates prior 11:17AM
24 A Yes, I see that. 11:14AM	24 testimony 11:17AM
25 Q Under that, it says, "This application of BFD can 11:14AM	25 THE WITNESS: I would add little bit to that in 11:17AM
Page 67	Page 69

1 the context of a certain routing protocol -- 11:17AM	1 where the "probably" comes from 11:20AM
2 MR. SILBERT: Okay. 11:17AM	2 Q Okay But you don't have any actual image in 11:20AM
3 THE WITNESS: -- it enables BFD for all 11:18AM	3 your head of those discussions; is that right? 11:20AM
4 interfaces where that routing protocol is enabled, but, 11:18AM	4 A That's correct 11:20AM
5 yeah. 11:18AM	5 Q Okay Why don't you go back to -- let's -- let's 11:20AM
6 BY MR. SILBERT: 11:18AM	6 look again at Exhibit 54, this table, and would you 11:20AM
7 Q Okay. We discussed earlier the fact that you 11:18AM	7 please turn to page 12 11:20AM
8 don't know who came up with the expression 11:18AM	8 Do you see, a little more than midway down the 11:21AM
9 "bfd all-interfaces"; is that correct? 11:18AM	9 page, the Command Expression in the left-hand column 11:21AM
10 MR. NEUKOM: Objection; misstates prior 11:18AM	10 "ip ospf authentication"? 11:21AM
11 testimony. 11:18AM	11 A Yeah, I see that 11:21AM
12 THE WITNESS: Yeah, so as I said earlier, this 11:18AM	12 Q Okay And do you see the next column with the 11:21AM
13 was a set of engineers who were working on this across 11:18AM	13 heading "Author/Originator Information"? It says 11:21AM
14 multiple protocols, and it's collaborative. I can't 11:18AM	14 "Cisco" and then your name? 11:21AM
15 pinpoint to specific engineer who probably suggested 11:18AM	15 A Yes, I see that 11:21AM
16 these exact words. 11:18AM	16 Q Did you come up with the expression "ip ospf 11:21AM
17 BY MR. SILBERT: 11:18AM	17 authentication"? 11:21AM
18 Q Okay. And I take it that you also don't know 11:18AM	18 A I'll probably give you a similar answer; that I 11:21AM
19 what sources that engineer or those engineers referred 11:18AM	19 was part of the team who were working on it Was this 11:21AM
20 to in coming up with that expression; is that correct? 11:19AM	20 purely me or was it a combined brainstorming with the 11:21AM
21 MR. NEUKOM: Objection; misstates prior 11:19AM	21 team, I don't have specific recollection 11:21AM
22 testimony. 11:19AM	22 Q Okay And similar to the "bfd all-interfaces" 11:22AM
23 THE WITNESS: Yeah, so, I mean, I can't recollect 11:19AM	23 command that we discussed, do you have any knowledge of 11:22AM
24 what -- what sources they used to come up with this 11:19AM	24 what person or persons actually came up with the 11:22AM
25 exactly. 11:19AM	25 expression "ip ospf authentication"? 11:22AM
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1 BY MR. SILBERT: 11:19AM	1 MR. NEUKOM: Objection; asked and answered. 11:22AM
2 Q What was your personal involvement, if any, in 11:19AM	2 THE WITNESS: Yeah, no specific names I can cite, 11:22AM
3 naming the "bfd all-interfaces" command? 11:19AM	3 but, again, this is similar to what I said. The team 11:22AM
4 A So I remember the implementation part of the 11:19AM	4 talks about it and comes up with the name. Who -- who 11:22AM
5 command where I was a developer writing the code and 11:19AM	5 seeded the word or part of the word and how we arrived 11:22AM
6 implementing the command 11:19AM	6 at the final word, no specific recollection. 11:22AM
7 In the naming part, as I said, I don't quite 11:19AM	7 BY MR. SILBERT: 11:22AM
8 recollect was it my idea or was it a collaborative idea 11:19AM	8 Q Okay. And, again, I -- I'm assuming this is 11:22AM
9 which finally came to these exact choice of words, yeah, 11:19AM	9 true, but correct me if I'm wrong. 11:22AM
10 so I don't recall Probably participated in the 11:19AM	10 You -- you have no image in your head of any 11:22AM
11 discussion of coming to this exact command syntax 11:19AM	11 discussions surrounding this particular term with 11:22AM
12 Q Okay Where you say "probably participated in 11:19AM	12 respect to coming up with this expression? 11:23AM
13 the discussion," do you have any recollection of 11:20AM	13 A That's correct, no specific recollection. 11:23AM
14 participating in a discussion that came to this exact 11:20AM	14 Q Okay. What is the function of the command 11:23AM
15 command syntax? 11:20AM	15 "ip ospf authentication"? 11:23AM
16 A Yeah, so no specific recollection 11:20AM	16 A This command is at a -- at a interface level, if 11:23AM
17 Q Do you have a general recollection of 11:20AM	17 I remember, and what this does is if -- if two devices 11:23AM
18 participating in that discussion? 11:20AM	18 are talking OSPF, you can configure both devices to -- 11:23AM
19 A The general recollection is, again, based on some 11:20AM	19 to do some level of encoding in the packets so that they 11:23AM
20 of the earlier comments I made The -- the way we 11:20AM	20 can validate each other. There are different types of 11:23AM
21 actually design a new command is the team talks about 11:20AM	21 authentication. There is -- if I remember, again, 11:23AM
22 it The team brainstorms about it, and I was part of 11:20AM	22 correctly, there is a clear text authentication. There 11:23AM
23 the team working at that time, so it will be hard to 11:20AM	23 is a message digest -- digest authentication, and I 11:23AM
24 believe that I was hiding under the table not really 11:20AM	24 think those are the -- those are the additional keywords 11:23AM
25 doing anything, so I was probably participating That's 11:20AM	25 associated with this command. 11:24AM
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<p>1 Q Okay. What's the significance of the term "ip" 11:24AM</p> <p>2 at the start of this command? 11:24AM</p> <p>3 A IP -- I think we -- we kept "ip" as the top-level 11:24AM</p> <p>4 keyword for things which were related to IP before, so 11:24AM</p> <p>5 "ip" really implies IP Version 4. 11:24AM</p> <p>6 Q Okay. And just to back up for a second, IP 11:24AM</p> <p>7 stands for Internet protocol; correct? 11:24AM</p> <p>8 A That is correct. 11:24AM</p> <p>9 Q And IPv4 stands for -- or refers to Version 4 of 11:24AM</p> <p>10 the Internet protocol; is that correct? 11:24AM</p> <p>11 A That is correct. That is correct. 11:24AM</p> <p>12 Q And the Internet protocol is specified in a 11:24AM</p> <p>13 standard published by the IETF; correct? 11:24AM</p> <p>14 A That it's correct. 11:24AM</p> <p>15 Q And IPv4 is specified in a standard published by 11:24AM</p> <p>16 the IP -- IETF; correct? 11:25AM</p> <p>17 A Yes, that's correct. 11:25AM</p> <p>18 Q Okay. The acronym IP was used by the industry to 11:25AM</p> <p>19 refer to Internet protocol before Cisco used it in CLI 11:25AM</p> <p>20 commands; correct? 11:25AM</p> <p>21 MR. NEUKOM: Objection; foundation. 11:25AM</p> <p>22 THE WITNESS: So the term "IP," just like we 11:25AM</p> <p>23 discussed for BFD -- right? -- when you write Internet 11:25AM</p> <p>24 standard, you try to abbreviate technologies, and, 11:25AM</p> <p>25 again, we can look at that document and confirm that's 11:25AM</p> <p style="text-align: right;">Page 74</p>	<p>1 this document, Exhibit 29? 11:27AM</p> <p>2 MR. NEUKOM: Objection; foundation. 11:27AM</p> <p>3 THE WITNESS: So I'm just reading page 1 -- or 11:27AM</p> <p>4 what you have in your bottom as 1557. Just below the 11:27AM</p> <p>5 RFC 791, it says, Replaces RFC 760, which generally 11:27AM</p> <p>6 implies there was prior work, which -- which his 11:27AM</p> <p>7 supersedes. 11:27AM</p> <p>8 BY MR. SILBERT: 11:28AM</p> <p>9 Q Okay. And forgive me if I've asked you this -- 11:28AM</p> <p>10 (Discussion off the stenographic record.) 11:28AM</p> <p>11 BY MR. SILBERT: 11:28AM</p> <p>12 Q I apologize if I've asked you this already, but 11:28AM</p> <p>13 have -- have you heard the Internet protocol abbreviated 11:28AM</p> <p>14 IP outside the context of Cisco? 11:29AM</p> <p>15 A As in what are the other possible abbreviations? 11:29AM</p> <p>16 For example, intellectual property we use "IP" term all 11:29AM</p> <p>17 the time. 11:29AM</p> <p>18 Q We do that too. No. 11:29AM</p> <p>19 My question is: Have you heard the abbreviation 11:29AM</p> <p>20 IP used to refer to the Internet protocol outside the 11:29AM</p> <p>21 context of Cisco? 11:29AM</p> <p>22 MR. NEUKOM: Objection; vague. 11:29AM</p> <p>23 THE WITNESS: So in -- in IETF -- as part of my 11:29AM</p> <p>24 role in IETF, people do loosely refer Internet Protocol 11:29AM</p> <p>25 Version 6 as "IP," as -- as one -- one of the variants. 11:29AM</p> <p style="text-align: right;">Page 76</p>
<p>1 true or not I'm guessing it says Internet protocol and 11:25AM</p> <p>2 that abbreviates it as "IP," and the document refers to 11:25AM</p> <p>3 that so that you don't have to keep saying "Internet 11:25AM</p> <p>4 protocol" or "Internet Protocol Version 4 " 11:25AM</p> <p>5 MR. NEUKOM: By the way, David, while you are 11:26AM</p> <p>6 getting a new document, just as a housekeeping matter, 11:26AM</p> <p>7 30 minutes or so ago I objected to a question you asked 11:26AM</p> <p>8 the witness on the basis of attorney-client privilege, 11:26AM</p> <p>9 and I meant to have objected on the basis of attorney 11:26AM</p> <p>10 work product 11:26AM</p> <p>11 MR. SILBERT: Okay 11:26AM</p> <p>12 MR. NEUKOM: So 11:26AM</p> <p>13 BY MR. SILBERT: 11:26AM</p> <p>14 Q This is -- let me show you a document that's 11:26AM</p> <p>15 already been marked as Exhibit 29 in this case 11:26AM</p> <p>16 Do you recognize this document? 11:26AM</p> <p>17 A Yes, I do 11:27AM</p> <p>18 Q What is it? 11:27AM</p> <p>19 A This is an RFC which details the Internet 11:27AM</p> <p>20 protocol 11:27AM</p> <p>21 Q And the publication date shown here is 11:27AM</p> <p>22 September 1981; correct? 11:27AM</p> <p>23 A Yes, that is correct 11:27AM</p> <p>24 Q And was this, to your knowledge, the first 11:27AM</p> <p>25 version of the Internet protocol that's described in 11:27AM</p> <p style="text-align: right;">Page 75</p>	<p>1 There are, again, multiple ways to say that 11:29AM</p> <p>2 BY MR. SILBERT: 11:29AM</p> <p>3 Q Have you heard the expression "TCP/IP"? 11:29AM</p> <p>4 A Yes, I have 11:29AM</p> <p>5 Q Do you know what the IP stands for in that 11:29AM</p> <p>6 expression? 11:29AM</p> <p>7 A That is the Internet protocol 11:30AM</p> <p>8 Q Okay And that's the same Internet protocol that 11:30AM</p> <p>9 we have been discussing here this morning; correct? 11:30AM</p> <p>10 A Correct 11:30AM</p> <p>11 Except in -- when you say "TCP/IP," it's probably 11:30AM</p> <p>12 a little broader because it does not imply which IP 11:30AM</p> <p>13 version you might be using For example, you may be 11:30AM</p> <p>14 using IP with IP Version 6, or you may be using 11:30AM</p> <p>15 IP Version 4 It's a slightly broader term 11:30AM</p> <p>16 Q Okay I think you mentioned this previously, but 11:30AM</p> <p>17 before somebody came up with the expression "ip ospf 11:30AM</p> <p>18 authentication," Cisco used "IP" as a top-level keyword 11:30AM</p> <p>19 in other commands; correct? 11:30AM</p> <p>20 A That is correct 11:30AM</p> <p>21 Q And so when someone came up with the expression 11:31AM</p> <p>22 "ip ospf authentication," they followed that same 11:31AM</p> <p>23 syntax; correct? 11:31AM</p> <p>24 MR. NEUKOM: Objection; vague 11:31AM</p> <p>25 THE WITNESS: Authentication keyword, when it was 11:31AM</p> <p style="text-align: right;">Page 77</p>

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<p>1 introduced -- again, I'm trying to recollect from my 11:31AM</p> <p>2 20-year-old memory IP OSPF existed in the sense that 11:31AM</p> <p>3 there were commands with IP OSPF some other options It 11:31AM</p> <p>4 made sense to attach authentication to that chain 11:31AM</p> <p>5 already rather than sort of create something brand new 11:31AM</p> <p>6 BY MR. SILBERT: 11:31AM</p> <p>7 Q Okay And, in fact, if you look below -- looking 11:31AM</p> <p>8 still at Exhibit 54, if you look immediately below "ip 11:31AM</p> <p>9 ospf authentication;" do you see the entry for "ip ospf 11:31AM</p> <p>10 authentication-key"? 11:32AM</p> <p>11 A Yes, I see that 11:32AM</p> <p>12 Q And the -- if you look there, the date of the 11:32AM</p> <p>13 earliest-known document that's listed for that 11:32AM</p> <p>14 expression is 1993, which is five years or so earlier 11:32AM</p> <p>15 than the date listed for "ip ospf authentication"; is 11:32AM</p> <p>16 that correct? 11:32AM</p> <p>17 A That's what this document says, yes 11:32AM</p> <p>18 Q Do you know what the person or persons who came 11:32AM</p> <p>19 up with the expression "ip ospf authentication" referred 11:32AM</p> <p>20 to when coming up with that expression? 11:32AM</p> <p>21 A Are you asking for the previous command, which is 11:32AM</p> <p>22 the "ip ospf authentication" -- 11:32AM</p> <p>23 Q Yes 11:32AM</p> <p>24 A -- or the "key" command -- 11:32AM</p> <p>25 Q No 11:32AM</p> <p style="text-align: right;">Page 78</p>	<p>1 A Yes 11:34AM</p> <p>2 MR. NEUKOM: Objection; misstates prior 11:34AM</p> <p>3 testimony 11:34AM</p> <p>4 THE WITNESS: Yes I don't have, again, specific 11:34AM</p> <p>5 recollection of what sort of documentation or documents 11:34AM</p> <p>6 we wrote at that time 11:34AM</p> <p>7 BY MR. SILBERT: 11:34AM</p> <p>8 Q Okay We have talked a little bit about OSPF 11:34AM</p> <p>9 There's an OSPF standard that's published by 11:34AM</p> <p>10 IETF; correct? 11:34AM</p> <p>11 MR. NEUKOM: Objection; vague 11:34AM</p> <p>12 THE WITNESS: So OSPF is basically Open Shortest 11:34AM</p> <p>13 Path First It's one of the routing protocols OSPF 11:34AM</p> <p>14 has had multiple IETF standards published over time, and 11:34AM</p> <p>15 as we just saw, in the case of IP, sometimes the newer 11:35AM</p> <p>16 one deprecate the older one and so on, so there are 11:35AM</p> <p>17 multiple standards out there related to OSPF 11:35AM</p> <p>18 MR. SILBERT: Okay 11:35AM</p> <p>19 (Exhibit 56 was marked for 11:35AM</p> <p>20 identification by the Court Reporter) 11:35AM</p> <p>21 BY MR. SILBERT: 11:35AM</p> <p>22 Q Mr. Roy, would you please look at Exhibit 56 and 11:36AM</p> <p>23 tell me if you recognize it 11:36AM</p> <p>24 A Yes, I do 11:36AM</p> <p>25 Q What is it? 11:36AM</p> <p style="text-align: right;">Page 80</p>
<p>1 A -- the previous -- okay 11:32AM</p> <p>2 Q Yeah 11:32AM</p> <p>3 A "Ip ospf authentication" referred to enabling the 11:32AM</p> <p>4 authentication features -- as we said, it could be 11:33AM</p> <p>5 clear text or it could be message digest -- on that 11:33AM</p> <p>6 interface 11:33AM</p> <p>7 Q Yeah, I apologize because my question -- 11:33AM</p> <p>8 A Okay 11:33AM</p> <p>9 Q -- wasn't clear 11:33AM</p> <p>10 What I actually was trying to ask you was: Do 11:33AM</p> <p>11 you know what documents or source materials the people 11:33AM</p> <p>12 who came up with the expression "ip ospf authentication" 11:33AM</p> <p>13 referred to when naming that command? 11:33AM</p> <p>14 A So I can't tell you anything very specific, but 11:33AM</p> <p>15 what typically happens, I can say, is when you write a 11:33AM</p> <p>16 new command, of course, you will see source code 11:33AM</p> <p>17 changes, which looks like it refers to You may also 11:33AM</p> <p>18 produce customer-facing documents For example, we saw 11:33AM</p> <p>19 command reference where also this will get documented as 11:33AM</p> <p>20 what it does and what the syntax is and so on 11:33AM</p> <p>21 Q Okay And just to be clear, you are saying 11:33AM</p> <p>22 that's what typically happens because you don't know 11:34AM</p> <p>23 what the person or persons who named the command 11:34AM</p> <p>24 "ip ospf authentication" actually referred to when they 11:34AM</p> <p>25 named that command; is that correct? 11:34AM</p> <p style="text-align: right;">Page 79</p>	<p>1 A This is another of OSPF standards RFC, which 11:36AM</p> <p>2 specifies OSPF protocol, protocol specification. 11:36AM</p> <p>3 Q And this document states that it was published in 11:36AM</p> <p>4 October 1989; correct? 11:36AM</p> <p>5 A That is correct. 11:36AM</p> <p>6 Q And the author listed here is someone named 11:36AM</p> <p>7 J. Moy, M-o-y; is that correct? 11:36AM</p> <p>8 A Yes. John Moy was the author. 11:36AM</p> <p>9 Q And the company where he's listed as working is 11:36AM</p> <p>10 Proteon, Inc.; is that correct? 11:37AM</p> <p>11 A Correct, so at the time of publication of this 11:37AM</p> <p>12 document, he was employed by Proteon, Inc. 11:37AM</p> <p>13 Q Do you know Mr. Moy? 11:37AM</p> <p>14 A Yes, I do. 11:37AM</p> <p>15 Q Did he ever work for Cisco? 11:37AM</p> <p>16 A Not that I know of. 11:37AM</p> <p>17 Q This document, in its title, uses the acronym 11:37AM</p> <p>18 OSPF; correct? 11:37AM</p> <p>19 A Yes, it does. 11:37AM</p> <p>20 Q Who -- who came up with that acronym, to your 11:37AM</p> <p>21 knowledge? 11:37AM</p> <p>22 A So I think I'll give you the same answer I gave 11:37AM</p> <p>23 for BFD. If you move to the page 1, which is 2601 in 11:37AM</p> <p>24 the bottom-right label, and if you see Section 1, talks 11:37AM</p> <p>25 about the first time that abbreviation was introduced, 11:37AM</p> <p style="text-align: right;">Page 81</p>

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1 and that's very typical in IETF standards, that the long 11:38AM	1 A Yeah, I see that. 11:41AM
2 things we create acronym at the first reference and 11:38AM	2 Q What is an area data structure in OSPF? 11:41AM
3 continue to use it in this document 11:38AM	3 MR. NEUKOM: Objection; calls for opinion 11:41AM
4 Q So my question is just this: So far as you know, 11:38AM	4 testimony. 11:41AM
5 someone outside of Cisco came up with the acronym OSPF; 11:38AM	5 THE WITNESS: So "data structure" is -- is a 11:41AM
6 correct? 11:38AM	6 computer science terminology which is how you store 11:41AM
7 A So IETF -- IETF products is a complicated 11:38AM	7 data, potentially, in a software implementation. 11:41AM
8 process, and let me just give you a quick glimpse of it 11:38AM	8 "Area" is a concept introduced in this RFC 11:41AM
9 What you are seeing is the finished product, 11:38AM	9 which -- which refers to a collection of devices which 11:42AM
10 which John Moy was the lead author and he took it to the 11:38AM	10 have -- which are in the same area -- or who make a 11:42AM
11 RFC 11:38AM	11 collective decision together by -- by knowing each 11:42AM
12 What happened before that and how many versions 11:38AM	12 other's state up front. 11:42AM
13 were there and who are the people who sort of worked and 11:38AM	13 So Internet data structure, I think, is going 11:42AM
14 collaborated to get to this stage, you can find that 11:38AM	14 into, if you had such a collection of objects, these are 11:42AM
15 information, that -- how many earlier revisions of the 11:38AM	15 the objects you probably want to keep in that collection 11:42AM
16 drafts are there, who are the collaborator, where they 11:38AM	16 of objects. 11:42AM
17 worked for -- whichever companies they worked for, 11:39AM	17 BY MR. SILBERT: 11:42AM
18 right? -- and how did they come to this 11:39AM	18 Q Okay. Okay. Would you look at two pages more 11:42AM
19 So it's hard to say, just looking at this, who 11:39AM	19 at -- on the page that ends with the Bates No. 624. 11:42AM
20 came with this and who coined the term or who coined the 11:39AM	20 A Yes. 11:42AM
21 acronym OSPF 11:39AM	21 Q And do you see the bolded term "authentication 11:42AM
22 Q Okay But nevertheless, that acronym was in 11:39AM	22 type"? It's in the top third -- 11:42AM
23 common usage before it was used by Cisco in a CLI 11:39AM	23 A Yes, I see that. 11:42AM
24 command; correct? 11:39AM	24 Q -- of the page? 11:42AM
25 MR. NEUKOM: Objection; calls for opinion 11:39AM	25 A Yeah, I see that. 11:42AM
Page 82	Page 84
1 testimony. 11:39AM	1 Q Under the OSPF standard, does an operator specify 11:42AM
2 THE WITNESS: So I don't know when Cisco 11:39AM	2 the authentication type to be used for an area? 11:43AM
3 implemented OSPF first, so it's hard to say what 11:39AM	3 MR. NEUKOM: Objection; vague, calls for opinion 11:43AM
4 happened first. 11:39AM	4 testimony 11:43AM
5 Again, a corollary comment, a lot of times Cisco 11:39AM	5 THE WITNESS: So as per this document, what was 11:43AM
6 is -- is the driver of technologies, and we implement 11:39AM	6 described here is in a area you could specify if 11:43AM
7 things, and then we publish standards off it, so there 11:39AM	7 authentication is in use, and I think it also refers to 11:43AM
8 could be a coincidence where it has been used in Cisco 11:39AM	8 this other section where you can find details of what 11:43AM
9 before or -- or in a standard document before -- again, 11:39AM	9 types of authentication, Appendix E 11:43AM
10 I don't know enough history on this that what happened 11:40AM	10 As a -- as a operator, you may or may not choose 11:43AM
11 when. 11:40AM	11 to have authentication That is totally up to you If 11:43AM
12 BY MR. SILBERT: 11:40AM	12 you think your network is very secure, you may choose to 11:43AM
13 Q Okay. You are going to agree with me, though, I 11:40AM	13 not have authentication If you really want to secure 11:43AM
14 think, that the standard itself uses the acronym OSPF; 11:40AM	14 your network, there are a variety of ways to 11:43AM
15 right? 11:40AM	15 authenticate it, and this just refers to that -- what 11:43AM
16 A The document does create the acronym for the use 11:40AM	16 mechanisms exist at the area level 11:44AM
17 for the document. 11:40AM	17 BY MR. SILBERT: 11:44AM
18 Q Okay. Would you turn to the page that ends in 11:40AM	18 Q Okay And would you agree that authentication is 11:44AM
19 the Bates No. 622? 11:40AM	19 a concept that's introduced in this OSPF specification? 11:44AM
20 MR. NEUKOM: Sorry, what page, David? 11:40AM	20 MR. NEUKOM: Objection; calls for opinion 11:44AM
21 MR. SILBERT: Bates No. 622. 11:40AM	21 testimony and vague 11:44AM
22 MR. NEUKOM: Okay. Thank you. 11:41AM	22 THE WITNESS: This document has used the term 11:44AM
23 BY MR. SILBERT: 11:41AM	23 "authentication," but basically what we are talking 11:44AM
24 Q Do you see Section 6 that's with the heading "The 11:41AM	24 about is: Are there ways -- are there ways to validate? 11:44AM
25 Area Data Structure"?	25 Are there ways to secure communication between devices? 11:44AM
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1 MR SILBERT: Okay We need to change the tape, 11:44AM	1 Q -- there is a bold entry "authentication type." 12:25PM
2 so we will have to pause there 11:44AM	2 Do you see that? 12:25PM
3 THE VIDEOGRAPHER: This marks the end of 11:44AM	3 A Yes. 12:25PM
4 Volume 1, Media No 1 of the deposition of Abhay Roy 11:44AM	4 Yeah, so what -- what that -- in the -- what 12:25PM
5 The time is 11:44 a m We are off the record 11:44AM	5 is -- what it's trying to say in the RFC is if you have 12:25PM
6 (Lunch recess taken) 11:44AM	6 for area some objects -- one of the objects is the 12:25PM
7 ---o0o--- 11:44AM	7 authentication type. That's what that document is 12:25PM
8 11:44AM	8 talking about. 12:25PM
9	9 Q And the -- the document is getting at the idea 12:25PM
10	10 that an operator can set the authentication type for 12:25PM
11	11 objects in an area; correct? 12:25PM
12	12 MR. NEUKOM: Objection; document speaks for 12:25PM
13	13 itself, calls for opinion testimony. 12:25PM
14	14 THE WITNESS: Yeah, so document is talking about, 12:26PM
15	15 at the area scope, if you support authentication, you 12:26PM
16	16 probably want to store objects related to the 12:26PM
17	17 authentication in that type of data store. 12:26PM
18	18 BY MR. SILBERT: 12:26PM
19	19 Q Okay. So looking at the command "ip ospf 12:26PM
20	20 authentication," the term "ip" in that command refers to 12:26PM
21	21 the Internet protocol standard; right? 12:26PM
22	22 MR. NEUKOM: Objection; misstates prior 12:26PM
23	23 testimony. 12:26PM
24	24 THE WITNESS: "ip" in that command refers to 12:26PM
25	25 Internet Protocol Version 4. 12:26PM
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1 AFTERNOON SESSION 12:24 P M 11:44AM	1 BY MR SILBERT: 12:26PM
2 12:24PM	2 Q Okay And that's a standard that's published by 12:26PM
3 THE VIDEOGRAPHER: We are back on the record at 12:24PM	3 the IETF; correct? 12:26PM
4 12:24 p m 12:24PM	4 A Internet protocol is an RFC 791, which is 12:26PM
5 This marks the beginning of Volume 1, Media No 2 12:24PM	5 published by the IETF, yes 12:26PM
6 of the deposition of Abhay Roy 12:24PM	6 Q Right 12:27PM
7 Please continue 12:24PM	7 And -- and 791 might be an earlier version, but 12:27PM
8 BY MR SILBERT: 12:24PM	8 are you aware that there's a separate RFC that's a 12:27PM
9 Q Good afternoon, Mr Roy 12:24PM	9 standard for Internet Protocol 4? 12:27PM
10 Before the lunch break, we were talking about the 12:24PM	10 A I don't know exactly if -- if there is a one -- 12:27PM
11 command "ip ospf authentication " 12:24PM	11 there is a version later than this which supersedes 12:27PM
12 Do you recall that? 12:24PM	12 this -- 12:27PM
13 A Yes, I do 12:24PM	13 Q Okay 12:27PM
14 Q Do you agree that authentication is a parameter 12:24PM	14 A -- but there might be; might not be not aware 12:27PM
15 that's introduced in the OSPF specification? 12:24PM	15 Q Okay And in the command "ip ospf 12:27PM
16 MR NEUKOM: Objection; vague, calls for opinion 12:24PM	16 authentication." "ospf" refers to the OSPF 12:27PM
17 THE WITNESS: I think you referred me to some 12:24PM	17 specification, Exhibit 56; correct? 12:27PM
18 section Could you point me to that again? 12:24PM	18 MR NEUKOM: Objection; misstates prior 12:27PM
19 MR SILBERT: Yeah We were looking at the page 12:24PM	19 testimony 12:27PM
20 that ends in Bates No 624 in Exhibit 56, which is the 12:24PM	20 THE WITNESS: So OSPF command -- or this command, 12:27PM
21 OSPF specification dated October 1989 12:25PM	21 which is in Cisco's implementation, refers to the 12:27PM
22 THE WITNESS: Was that 624? 12:25PM	22 protocol called "OSPF," which is documented in an IETF 12:27PM
23 MR SILBERT: Yes 12:25PM	23 stand -- IETF RFC 12:28PM
24 Q Yeah, in the top third of the page -- 12:25PM	24 BY MR SILBERT: 12:28PM
25 A Oh, yes Yes Sorry, my bad 12:25PM	25 Q Okay And in the term "ip ospf authentication," 12:28PM
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1 the term "authentication" refers to an authentication 12:28PM	1 drawn on in coming up with the expression "ip ospf 12:30PM
2 parameter that's described in the OSPF standard; 12:28PM	2 authentication"; correct? 12:31PM
3 correct? 12:28PM	3 MR NEUKOM: Objection; asked and answered 12:31PM
4 MR NEUKOM: Objection; calls for opinion 12:28PM	4 THE WITNESS: Resources -- could you -- could you 12:31PM
5 testimony and document speaks for itself 12:28PM	5 rephrase what resources? 12:31PM
6 THE WITNESS: So OSPF RFC does use the language 12:28PM	6 MR SILBERT: Sure 12:31PM
7 "authentication," and Cisco's CLI also happens to use 12:28PM	7 Q Do you know if the person or people who came up 12:31PM
8 the language "authentication"; although, we are 12:28PM	8 with this expression had the OSPF standard in front of 12:31PM
9 primarily talking about how to secure, how to validate 12:28PM	9 them when they came up with the expression? 12:31PM
10 OSPF packets, really 12:28PM	10 A Again, I can't say that with -- with certainty 12:31PM
11 BY MR SILBERT: 12:28PM	11 They may or may not have referred to the standard 12:31PM
12 Q Okay Are you saying that your command uses 12:28PM	12 Q Okay And do you know whether the person or 12:31PM
13 "authentication" in a different way than the standard 12:28PM	13 people who came up with this expression derived it from 12:31PM
14 does? 12:28PM	14 a pre-existing expression? 12:31PM
15 A So the -- so the section we are looking at in the 12:28PM	15 MR NEUKOM: Objection; calls for opinion 12:31PM
16 standard is at the area scope versus the command we are 12:28PM	16 testimony and legal conclusion 12:31PM
17 looking at is at the interface scope They are two 12:29PM	17 THE WITNESS: Yeah, so I have some more context 12:31PM
18 different things The scope is different 12:29PM	18 on that 12:31PM
19 Q I see Okay 12:29PM	19 What you just saw in -- in the RFC -- what I was 12:31PM
20 I think we have covered this in general, but I 12:29PM	20 saying, it's area scope -- Cisco actually supports that 12:31PM
21 just want to be clear 12:29PM	21 command also There is a similar command at the area 12:31PM
22 Is it correct that you do not know who actually 12:29PM	22 scope 12:32PM
23 named the command "ip ospf authentication" at Cisco? 12:29PM	23 When -- when we did this, this was sort of over 12:32PM
24 A So as I -- as I have said in the past, I was part 12:29PM	24 and beyond what standards do, and this is where Cisco's 12:32PM
25 of the team I did participate in the team to come up 12:29PM	25 value-add came in We saw people who wanted to do this 12:32PM
Page 90	Page 92
1 with this. Was it exactly my idea or somebody else's 12:29PM	1 type of behavior in specific interfaces and not all 12:32PM
2 idea? That I don't specifically recall, but I was part 12:29PM	2 interfaces which are part of an area So this was 12:32PM
3 of the team who came up with the -- the keyword, and I 12:29PM	3 created to be similar to what the area command Cisco 12:32PM
4 was part of the team which was doing the implementation. 12:29PM	4 already has 12:32PM
5 Q Okay. And it's -- you have no memory of the 12:29PM	5 BY MR SILBERT: 12:32PM
6 actual process of coming up with this command; correct? 12:29PM	6 Q Okay And is that area command that Cisco 12:32PM
7 MR. NEUKOM: Objection; misstates prior 12:29PM	7 already had "ip ospf authentication-key"? 12:32PM
8 testimony. 12:30PM	8 A No That is -- we are still looking at interface 12:32PM
9 THE WITNESS: Specifically what happened for this 12:30PM	9 scope commands It will be probably in a different 12:32PM
10 particular command and what process, I don't have a 12:30PM	10 context It will be under routing context, and the 12:32PM
11 specific memory, but as I have said earlier, the way the 12:30PM	11 command will be called different I don't recall what 12:32PM
12 process is, is one or -- or more engineers come up with 12:30PM	12 the command is exactly called, but that is not the 12:32PM
13 certain set of keywords. We have a discussion. And 12:30PM	13 command 12:32PM
14 then we arrive at what finally happens. And then there 12:30PM	14 Q Okay What -- what is the command that you are 12:32PM
15 was more about parser police, but I'll not go into that. 12:30PM	15 saying the command "ip ospf authentication" was designed 12:33PM
16 BY MR. SILBERT: 12:30PM	16 to be similar to? 12:33PM
17 Q Okay. And with respect to this command, you 12:30PM	17 MR NEUKOM: Objection; misstates prior 12:33PM
18 don't know who came up with the expression; correct? 12:30PM	18 testimony 12:33PM
19 MR. NEUKOM: Objection; asked and answered. 12:30PM	19 THE WITNESS: I don't recall the exact syntax of 12:33PM
20 THE WITNESS: So I participated in the team of 12:30PM	20 that command, but it will be -- it will be in a 12:33PM
21 engineers who came up with this, but I can't tell you 12:30PM	21 different context It will be in the router context, 12:33PM
22 exactly the engineer who uttered the word, "This is 12:30PM	22 not in the interface context 12:33PM
23 exactly what we should call it." 12:30PM	23 BY MR SILBERT: 12:33PM
24 BY MR. SILBERT: 12:30PM	24 Q How would I find that command if I wanted to find 12:33PM
25 Q Okay. And you don't know what resources were 12:30PM	25 it? 12:33PM
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1 A If you saw a complete reference of OSPF 12:33PM	1 A c-e-e, Lindem, L-i-n-d-e-m, but I'm not 100 percent 12:37PM
2 configuration on a device, we could find it from there. 12:33PM	2 sure if he was still on that team or he left Cisco by 12:37PM
3 Q What would I look for to find it? 12:33PM	3 that time. 12:37PM
4 A You could search for keywords like "area" or 12:33PM	4 Q Okay. Can you remember any other names of people 12:37PM
5 "authentication." 12:33PM	5 who were on the team? 12:37PM
6 Q Okay. Who else was on the team who came up with 12:33PM	6 A Nothing is coming to my head. 12:37PM
7 the command "ip ospf authentication"? 12:33PM	7 Q Okay. Referring back to Exhibit 54, would you 12:38PM
8 A So I'm trying to recollect who all were part of 12:34PM	8 please turn to page 12. 12:38PM
9 the OSPF team. There were probably a small set of 12:34PM	9 A Yeah, I'm there. 12:38PM
10 people. 12:34PM	10 Q In the bottom third of the page, do you see the 12:38PM
11 Are you looking for specific names? 12:34PM	11 command expression "ip ospf bfd"? 12:38PM
12 Q Yes. 12:34PM	12 A Yes. 12:38PM
13 A One person I could think of is Derek Yeung. 12:34PM	13 Q Okay. And then in the next column with the 12:38PM
14 Q Can you spell that, please. 12:34PM	14 heading "Author/Originator Information," it says "Cisco" 12:38PM
15 A Actually, he calls himself Derek, but the -- 12:34PM	15 and your name; correct? 12:38PM
16 okay. D-r-e-k [sic] and Yeung is Y-e-u-n-g. 12:34PM	16 A Yes. 12:38PM
17 Q Okay. 12:34PM	17 Q Did you come up with the expression "ip ospf 12:38PM
18 A He was -- he was one of the senior guys in the 12:34PM	18 bfd"? 12:38PM
19 team. 12:34PM	19 A Yeah, so BFD -- I was the lead implementer of it 12:38PM
20 Who were other people around that time. There 12:34PM	20 and very likely I proposed the -- the command. 12:39PM
21 was -- there was somebody called Padma, P-a-d-m-a. Her 12:34PM	21 Q Okay. And you say very likely you proposed the 12:39PM
22 last name was Esnault, E-s-n-a-u-l-t. And these two 12:34PM	22 command. 12:39PM
23 names I can remember very clearly. There may be more 12:35PM	23 Do you have any recollection of doing that? 12:39PM
24 people who were part of the OSPF team at that time. 12:35PM	24 A I don't remember anybody else worked on it, so 12:39PM
25 Q Is that the best recollection you have, as you 12:35PM	25 I -- I proposed the command. Yeah, I think I proposed 12:39PM
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1 sit here today, of who else was on the team that came up 12:35PM	1 the command I don't think there was anybody else on 12:39PM
2 with the command "ip ospf authentication"? 12:35PM	2 this project 12:39PM
3 A Yes 12:35PM	3 Q Okay And I appreciate your reasons for saying 12:39PM
4 Q Okay Who else was on the team that came up with 12:35PM	4 that, but my question is: Do you have any recollection 12:39PM
5 the command "bfd all-interfaces"? 12:35PM	5 of proposing this command "ip ospf bfd"? 12:39PM
6 A That was on page 3? 12:35PM	6 A Yes 12:39PM
7 Q Correct 12:35PM	7 MR NEUKOM: Objection; asked and answered 12:39PM
8 MR NEUKOM: Page 3 of Exhibit 54 12:35PM	8 BY MR SILBERT: 12:39PM
9 THE WITNESS: This is actually much later than 12:36PM	9 Q What's your recollection? 12:39PM
10 that, so this -- I'm just going with the date, which is 12:36PM	10 A I remember the document which described this, and 12:39PM
11 also listed here, 2004 to 2005 We had different 12:36PM	11 I think I was -- I was the author of the document It's 12:39PM
12 engineers around that time on those PF [phonetic] team 12:36PM	12 a small amount of work And generally what happens is 12:39PM
13 Couple names I can recollect One was Liem, L-i-e-in, 12:36PM	13 if there is large project, you have a larger group of 12:39PM
14 and Nguyen, N-g-y-u-e-n, I think Last name may have 12:36PM	14 people who work on the project For smaller ones, you 12:40PM
15 spelled incorrectly Another engineer was Peter, 12:36PM	15 are the sole implementer, so you pretty much do most of 12:40PM
16 P-e-t-e-r, Psenak, P-s-e-n-a-k There are probably more 12:36PM	16 the work, all the way from designing the command and the 12:40PM
17 names, but those are a couple of names 12:37PM	17 implementation This was another smaller features 12:40PM
18 BY MR SILBERT: 12:37PM	18 Q Okay The term "ip" in the command "ip ospf bfd" 12:40PM
19 Q Okay Are you able to tell me any other names of 12:37PM	19 refers to the Internet protocol standard that's 12:40PM
20 people who are on the team who named the command 12:37PM	20 specified by the IETF; correct? 12:40PM
21 "bfd all-interfaces"? 12:37PM	21 A "ip" in this command refers to Internet Protocol 12:40PM
22 A Yeah, I don't recall any more specific names 12:37PM	22 Version 4, which is documented in RFC 791, and there 12:40PM
23 mean, there are people around that time, but I want to 12:37PM	23 might be further revisions of it, if not 12:40PM
24 make sure that they were in Cisco at that time 12:37PM	24 Q Okay And the term "ospf" in the command 12:40PM
25 For example, there is one engineer called Acee, 12:37PM	25 "ip ospf bfd" refers to the OSPF standard that's 12:40PM
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1 specified by the IETF; correct? 12:40PM	1 the OSPF standard, a newer version than what you have 12:45PM
2 A Yes 12:40PM	2 shown me, and it talks about if you are compliant to 12:45PM
3 MR NEUKOM: Objection; misstates prior 12:41PM	3 that version, that implementation could use BFD 12:45PM
4 testimony, calls for opinion 12:41PM	4 services 12:45PM
5 THE WITNESS: The OSPF acronym we have used is 12:41PM	5 BY MR SILBERT: 12:45PM
6 for Open Shortest Path First protocol, which is also 12:41PM	6 Q Okay What resources did you use when naming the 12:45PM
7 described and captured in RFC 12:41PM	7 "ip ospf bfd" command? 12:46PM
8 BY MR SILBERT: 12:41PM	8 MR NEUKOM: Objection; vague 12:46PM
9 Q Okay And the -- the term "bfd" in the command 12:41PM	9 THE WITNESS: By "resources" you are implying 12:46PM
10 "ip ospf bfd" refers to the BFD standard that's 12:41PM	10 what type of material documents, those kind of things? 12:46PM
11 specified by the IETF; correct? 12:41PM	11 MR SILBERT: Correct 12:46PM
12 A BFD acronym stands for Bidirectional Forwarding 12:41PM	12 THE WITNESS: I had looked at the specification, 12:46PM
13 Detection, which is -- which is, yes, also captured in 12:41PM	13 of course It -- I don't know if it was this version or 12:46PM
14 IETF RFC 12:41PM	14 if it was an earlier version of -- of the BFD protocol 12:46PM
15 Q And the BFD standard itself describes using BFD 12:41PM	15 specification, and beyond that, it may have been some 12:46PM
16 with OSPF; is that correct? 12:41PM	16 conversation about who wants it, but I don't have any 12:46PM
17 MR NEUKOM: Objection; document calls for its -- 12:41PM	17 specific recollection was there a formal Product 12:46PM
18 pardon me Document speaks for itself, calls for 12:42PM	18 Requirement Document also written with it 12:46PM
19 opinion testimony 12:42PM	19 BY MR SILBERT: 12:46PM
20 THE WITNESS: BFD spec -- again, my recollection 12:42PM	20 Q What do you mean when you say "some conversation 12:47PM
21 is BFD spec was written in a more generic sense It may 12:42PM	21 about who wants it"? 12:47PM
22 or may not have explicitly called out how and which 12:42PM	22 A Yes As I was saying earlier, most of the things 12:47PM
23 protocols you can -- you can make use of it, but, again, 12:42PM	23 we implement are of two categories, typically 12:47PM
24 if you have some more text, I can look into it 12:42PM	24 One is customer-driven, which is, you are talking 12:47PM
25 // 12:42PM	25 to certain customers They are telling you they want 12:47PM
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1 (Exhibit 57 was marked for 12:42PM	1 this type of technology Then you try to build that 12:47PM
2 identification by the Court Reporter) 12:43PM	2 technology 12:47PM
3 BY MR SILBERT: 12:43PM	3 Or they are innovation-driven, which is we want 12:47PM
4 Q Mr Roy, would you please look at Exhibit 57 and 12:43PM	4 to showcase some new things which we have built, and 12:47PM
5 tell me if you recognize it 12:43PM	5 they are more outwards 12:47PM
6 A Yes, I do 12:43PM	6 In the latter, you will not have a customer 12:47PM
7 Q What is it? 12:44PM	7 requirement document -- or Product Requirement Document 12:47PM
8 A This is an RFC which describes the base protocol 12:44PM	8 because there is -- nobody has requested at this point 12:47PM
9 for bidirectional detection 12:44PM	9 versus, in the former case, you will have some level of 12:47PM
10 Q Would you look, please, at the page that ends 12:44PM	10 conversation, communication, or perhaps a more formal 12:47PM
11 with the Bates No 760 12:44PM	11 document which describes what a customer really intends 12:47PM
12 A Yes, I'm there 12:44PM	12 to do 12:47PM
13 Q Do you see Section 3 I? Towards the bottom of 12:44PM	13 Q In the case of customer-driven developments, do 12:47PM
14 that section in that single paragraph, it says, "For 12:44PM	14 customers ever suggest CLI commands? 12:48PM
15 example, an OSPF implementation may request a BFD 12:44PM	15 MR NEUKOM: Objection; vague, compound, phrased 12:48PM
16 session to be established to a neighbor discovered using 12:44PM	16 in the subjunctive 12:48PM
17 the OSPF Hello protocol " 12:44PM	17 MR SILBERT: Now you got me 12:48PM
18 Do you see that? 12:44PM	18 THE WITNESS: Is that -- is that in reference to 12:48PM
19 A Yes, I see that 12:44PM	19 this command in particular, or is it -- 12:48PM
20 Q And that sentence is describing using BFD with 12:44PM	20 MR SILBERT: No I was asking you more 12:48PM
21 OSPF; correct? 12:45PM	21 generally 12:48PM
22 MR NEUKOM: Objection; document speaks for 12:45PM	22 THE WITNESS: Okay You are asking for my 12:48PM
23 itself, and to the extent it doesn't, calls for opinion 12:45PM	23 opinion? 12:48PM
24 testimony 12:45PM	24 MR SILBERT: I'm asking for your personal 12:48PM
25 THE WITNESS: Yeah, it -- so this does reference 12:45PM	25 knowledge 12:48PM
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<p>1 THE WITNESS: Okay I mean, from -- I mean, this 12:48PM</p> <p>2 is probably a more broader comment I don't recall 12:48PM</p> <p>3 seeing any specifics of what command somebody should 12:48PM</p> <p>4 implement They typically talk about the customer wants 12:48PM</p> <p>5 to get this functionality, not how Cisco should 12:48PM</p> <p>6 implement from the CLI perspective That will be rare 12:48PM</p> <p>7 if somebody even ventures into that 12:48PM</p> <p>8 BY MR. SILBERT: 12:48PM</p> <p>9 Q Are you aware of Cisco customers providing any 12:49PM</p> <p>10 feedback on CLI commands? 12:49PM</p> <p>11 MR. NEUKOM: Same objections; vague, compound 12:49PM</p> <p>12 THE WITNESS: I'm not aware of anything in 12:49PM</p> <p>13 particular 12:49PM</p> <p>14 BY MR. SILBERT: 12:49PM</p> <p>15 Q Are you aware of anything in general? 12:49PM</p> <p>16 A We do something called "early field trial," which 12:49PM</p> <p>17 typically happens if a new product goes out or a new 12:49PM</p> <p>18 software release goes out Customers will typically try 12:49PM</p> <p>19 your functionality and give you feedback in terms of how 12:49PM</p> <p>20 they want to change the functionality, if it is not 12:49PM</p> <p>21 meeting their exact functional needs So we get 12:49PM</p> <p>22 feedbacks on -- on that type of thing; that, "I asked 12:49PM</p> <p>23 you to do this, but your thing is doing slightly 12:49PM</p> <p>24 different Can you change the behavior of that?" 12:49PM</p> <p>25 Command line kind of thing, customers don't care 12:49PM</p> <p style="text-align: right;">Page 102</p>	<p>1 some other command? 12:51PM</p> <p>2 MR. NEUKOM: Objection; vague and compound 12:51PM</p> <p>3 THE WITNESS: I don't recall if we -- if we ever 12:51PM</p> <p>4 had multiple iterations on this particular command In 12:51PM</p> <p>5 the slightly longer context is OSPF Version 3 was 12:52PM</p> <p>6 inspired and seeded with some of the same concepts we 12:52PM</p> <p>7 had in OSPF Version 2, so when we designed the CLI, it 12:52PM</p> <p>8 was actually more to align how OSPF Version 2 things are 12:52PM</p> <p>9 structured and -- yeah 12:52PM</p> <p>10 BY MR. SILBERT: 12:52PM</p> <p>11 Q So -- right 12:52PM</p> <p>12 What -- tell me why you are referring to OSPF 12:52PM</p> <p>13 Version 3? 12:52PM</p> <p>14 A So IPv6 OSPF is -- is what is referred to as OSPF 12:52PM</p> <p>15 Version 3 So, again, the longer story there is OSPF 12:52PM</p> <p>16 had a first version -- I should say second version, OSPF 12:52PM</p> <p>17 second -- Version 2 was the real version which most 12:52PM</p> <p>18 people actually implemented and deployed That only 12:52PM</p> <p>19 supported IP Version 4 prefix routing 12:52PM</p> <p>20 When IP Version 6 became popular, OSPF had to 12:53PM</p> <p>21 reinvent itself, and OSPF Version 3 came along, which is 12:53PM</p> <p>22 a separate Internet -- Internet RFC, right? 12:53PM</p> <p>23 So if you look at RFC OSPF Version 3, it came 12:53PM</p> <p>24 later when IPv6 work was happening So if you see 12:53PM</p> <p>25 things which are referred to IPv6 OSPF, they are 12:53PM</p> <p style="text-align: right;">Page 104</p>
<p>1 They don't want to get into Cisco does what Cisco 12:49PM</p> <p>2 does 12:50PM</p> <p>3 Q Okay Let's go back to Exhibit 54, and could you 12:50PM</p> <p>4 please turn to page 16 12:50PM</p> <p>5 Do you see the command "IPv6 ospf area"? It's 12:50PM</p> <p>6 third from the bottom 12:50PM</p> <p>7 A Yes 12:50PM</p> <p>8 Q And you are indicated as the author, slash, 12:50PM</p> <p>9 originator with respect to that command; is that 12:50PM</p> <p>10 correct? 12:50PM</p> <p>11 A Yes 12:50PM</p> <p>12 Q Did you come up with the expression "IPv6 ospf 12:50PM</p> <p>13 area"? 12:50PM</p> <p>14 A Yes So -- yes I mean, the answer is yes 12:50PM</p> <p>15 Q You, personally, did that, or you were part of a 12:50PM</p> <p>16 team that did that? 12:50PM</p> <p>17 A So that's what I was thinking It was -- it was 12:51PM</p> <p>18 a set of people, but I was the lead developer, so I 12:51PM</p> <p>19 wrote the initial functional spec, initial design and 12:51PM</p> <p>20 initial user interface, but there were different 12:51PM</p> <p>21 implementer -- implementers who were part of the 12:51PM</p> <p>22 project, so they helped code it, basically 12:51PM</p> <p>23 Q Okay And do you know whether, in the initial 12:51PM</p> <p>24 functional spec and design and user interface, the 12:51PM</p> <p>25 command that you proposed was "IPv6 ospf area" versus 12:51PM</p> <p style="text-align: right;">Page 103</p>	<p>1 referring to OSPF Version 3 We could have chosen to 12:53PM</p> <p>2 call it OSPFv3, or OSPF Version 3 We chose to call it 12:53PM</p> <p>3 IPv6 OSPF in our command syntax 12:53PM</p> <p>4 Q So before you named the IPv6 OSPF area command, 12:53PM</p> <p>5 Cisco already used a command with a name "ip ospf area"; 12:53PM</p> <p>6 correct? 12:53PM</p> <p>7 A That is correct 12:53PM</p> <p>8 Q Okay 12:53PM</p> <p>9 A And "ip ospf" there referred to OSPF Version 2 12:53PM</p> <p>10 Q Right 12:53PM</p> <p>11 And IPv6 refers to Version 6 of the IP protocol; 12:53PM</p> <p>12 correct? 12:54PM</p> <p>13 A IP version -- yes IPv6 refers to Version 6 of 12:54PM</p> <p>14 the IP protocol, which is a different Internet RFC 12:54PM</p> <p>15 Q Right 12:54PM</p> <p>16 And -- and in that RFC -- and I'm happy to show 12:54PM</p> <p>17 it to you if you want -- the -- it uses -- that RFC uses 12:54PM</p> <p>18 the acronym IPv6; correct? 12:54PM</p> <p>19 A I don't recall if it does or does not 12:54PM</p> <p>20 (Exhibit 58 was marked for 12:54PM</p> <p>21 identification by the Court Reporter) 12:54PM</p> <p>22 BY MR. SILBERT: 12:54PM</p> <p>23 Q Mr. Roy, would you please look at Exhibit 58 and 12:55PM</p> <p>24 tell me if you recognize it 12:55PM</p> <p>25 A Yes, I do 12:55PM</p> <p style="text-align: right;">Page 105</p>

1 Q What is it? 12:55PM	1 is done, go with it. 12:58PM
2 A This is an RFC which captures all the 12:55PM	2 Some of the other ways to do that could be, you 12:58PM
3 specifications for Internet Protocol Version 6. 12:55PM	3 could just say "ospfv3 area." We chose to call it "ipv6 12:58PM
4 Q Okay. And the title is "Internet Protocol 12:55PM	4 ospf area." 12:59PM
5 Version 6 (IPv6) Specification"; correct? 12:55PM	5 BY MR. SILBERT: 12:59PM
6 A That is correct. 12:55PM	6 Q And -- and did you model the command "ipv6 ospf 12:59PM
7 Q Okay. And does this refresh your recollection 12:55PM	7 area" on the pre-existing command "ip ospf area"? 12:59PM
8 that the Internet Protocol Version 6 specification 12:55PM	8 MR. NEUKOM: Objection; vague. 12:59PM
9 itself uses the acronym IPv6? 12:55PM	9 THE WITNESS: The pre-existence of "ip ospf area" 12:59PM
10 A This document does introduce the acronym IPv6, 12:55PM	10 was a strong motivator for us to converge on this 12:59PM
11 again, for the purposes of making the document more 12:55PM	11 choice. 12:59PM
12 readable and not having to expand Internet Protocol 12:56PM	12 BY MR. SILBERT: 12:59PM
13 Version 6 everywhere. 12:56PM	13 Q Okay. Who else was on the team that -- I mean, I 12:59PM
14 Q And in the command "ipv6 ospf area," the term 12:56PM	14 understand you are saying you -- you did come up with 12:59PM
15 "ipv6" refers to this protocol, Exhibit 58; correct? 12:56PM	15 this command, but who else was on the team with you at 12:59PM
16 A The term IP -- yes, "ipv6" refers to the Internet 12:56PM	16 the time you came up with this command? And by "this 12:59PM
17 Protocol Version 6, which is described in this RFC. 12:56PM	17 command," I'm referring to "ipv6 ospf area." 12:59PM
18 Q Okay. And in the command "ipv6 ospf area," the 12:56PM	18 A I think there were multiple engineers. I can't 12:59PM
19 term "ospf" refers to the OSPF standard published by the 12:56PM	19 recollect the exact names at this point. 01:00PM
20 IETF; correct? 12:56PM	20 Q Okay. Let's move on. 01:00PM
21 A Not really. So if you just say "OSPF," you might 12:56PM	21 Do you still have page 16 of Exhibit 54 in front 01:00PM
22 think OSPF Version 2, and that's where you have to see 12:56PM	22 of you? 01:00PM
23 the whole context of what we are talking about. 12:56PM	23 A Yes, I do. 01:00PM
24 IPv6 OSPF is OSPF Version 3. So these two words 12:57PM	24 Q Next is "ipv6 ospf cost." 01:00PM
25 combined, IPv6 and OSPF, actually tells you to look at a 12:57PM	25 Do you see that, second from the bottom? 01:00PM
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1 different RFC, which is the OSPF Version 3 RFC, but if 12:57PM	1 A Yes, I do. 01:00PM
2 you just told me "OSPF," I would have interpreted it as 12:57PM	2 Q And, again, you are indicated as the author, 01:00PM
3 you mean OSPF Version 2, which is a different RFC, just 12:57PM	3 slash, originator with respect to that command 01:00PM
4 for semantics 12:57PM	4 expression. 01:00PM
5 Q Understood, and you explained to me previously 12:57PM	5 Do you see that? 01:00PM
6 that the reason OSPF Version 3 was developed was to 12:57PM	6 A Yes. 01:00PM
7 accommodate IPv6; correct? 12:57PM	7 MR. NEUKOM: Objection; misstates -- 01:00PM
8 A That's correct 12:57PM	8 mischaracterizes the document. 01:01PM
9 Q Okay And we may have discussed this earlier. 12:57PM	9 BY MR. SILBERT: 01:01PM
10 but area is a parameter that's introduced in the OSPF 12:57PM	10 Q Okay. You and Cisco are indicated as the author, 01:01PM
11 specification; correct? 12:57PM	11 slash, originator; is that correct? 01:01PM
12 A Area is a collection or a cluster of devices 12:57PM	12 A Yeah, that's correct. 01:01PM
13 That concept does exist in -- in the RFCs, yes 12:57PM	13 Q And did you come up with the expression "ipv6 01:01PM
14 Q Okay And the RFCs refer to it as "area"; right? 12:57PM	14 ospf cost"? 01:01PM
15 A RFC documents does use the word "area," yes 12:57PM	15 A Yeah, it's the same. If you see the document, 01:01PM
16 Q Okay Is it a fair statement that when you came 12:58PM	16 which it lists the EK number, it's part of the same 01:01PM
17 up with the command "ipv6 ospf area," what you did was 12:58PM	17 document, so this and anything which talks about IPv6 01:01PM
18 refer to the pre-existing command "ip ospf area" and 12:58PM	18 OSPF is all part of sort of one development deferred, 01:01PM
19 changed the "ip" to "ipv6" because you were now dealing 12:58PM	19 and all those commands pretty much follow the same 01:01PM
20 with the IP Version 6? 12:58PM	20 paradigm. 01:01PM
21 MR. NEUKOM: Objection; vague and compound 12:58PM	21 But to answer your specific question, yes, I 01:01PM
22 THE WITNESS: So we looked at -- we looked at 12:58PM	22 wrote that document and pretty much came up with the 01:01PM
23 what is existing in -- in Cisco IOS implementation, and 12:58PM	23 whole IPv6 OSPF command set. 01:01PM
24 that, generally, is one of the overriding things; that 12:58PM	24 Q And we can go through these one by one, and I 01:01PM
25 don't reinvent the wheel If there is something which 12:58PM	25 suspect we will, but isn't it true that for every 01:01PM
Page 107	Page 109

1 command for which your name appears in the 01:01PM	1 A Yes, I see that 01:05PM
2 author/originator column that starts with "ipv6," that 01:02PM	2 Q So do you agree that the OSPF specification 01:05PM
3 command is identical to a pre-existing command, with the 01:02PM	3 describes cost as a parameter that the system 01:05PM
4 only difference that the pre-existing command used "ip" 01:02PM	4 administrator can configure? 01:05PM
5 instead of "ipv6"? 01:02PM	5 MR NEUKOM: Objection; document speaks for 01:05PM
6 MR. NEUKOM: Objection; vague, compound. 01:02PM	6 itself To the extent it doesn't, calls for opinion 01:05PM
7 THE WITNESS: So I'll have to see the -- the 01:02PM	7 THE WITNESS: So document is using the language 01:05PM
8 complete list of commands to make that statement. I'm 01:02PM	8 with the word "cost" Now, you could use cost metric, a 01:06PM
9 not sure if this has the complete list, but if you have 01:02PM	9 number, but I do structurally see what you mean I 01:06PM
10 the both -- the command set -- 01:02PM	10 don't think the document, at least this paragraph, talks 01:06PM
11 BY MR. SILBERT: 01:02PM	11 about you must call it cost, if that makes sense 01:06PM
12 Q Well, you do have it in front of you in this 01:02PM	12 BY MR. SILBERT: 01:06PM
13 large document, but I don't know that it's the best use 01:02PM	13 Q Okay The standard doesn't say you must call it 01:06PM
14 of our collective time to -- for you to go point by 01:02PM	14 cost, but the standard does call it "cost"; right? 01:06PM
15 point. 01:02PM	15 A The document does use the word "cost" to refer to 01:06PM
16 A Sure. 01:02PM	16 that, yes 01:06PM
17 Q With respect to specifically the command "ipv6 01:02PM	17 Q And that's the same word that you use in the 01:06PM
18 ospf cost," did you model that on a pre-existing command 01:02PM	18 command "ip ospf cost"; right? 01:06PM
19 used at Cisco, "ip ospf cost"? 01:02PM	19 A We have used the word "cost" 01:06PM
20 A Yes, that is correct. 01:03PM	20 Q Same word that's in the standard? 01:06PM
21 Q Okay. And in the command, "ipv6" refers to 01:03PM	21 A The two words are the same 01:06PM
22 Version 6 of the IP standard that's specified by the 01:03PM	22 Q Yes 01:06PM
23 IETF; correct? 01:03PM	23 Let's go on I suspect that your explanation is 01:07PM
24 A Correct. "ipv6" refers to Internet Protocol 01:03PM	24 going to be similar for this group of IPv6 commands 01:07PM
25 Version 6 as specified in the RFC. 01:03PM	25 A Yeah 01:07PM
Page 110	Page 112
1 Q Right. 01:03PM	1 Q But for the sake of the record, I think we need 01:07PM
2 And in the command "ipv6 ospf cost," "ospf" 01:03PM	2 to just cover them all. 01:07PM
3 refers to Version 3 of the OSPF standard that's 01:03PM	3 A Yeah, please. 01:07PM
4 specified by the IETF; correct? 01:03PM	4 Q If you go back to Exhibit 54, we are looking at 01:07PM
5 A Correct. In this context, "ipv6" refers to 01:03PM	5 page 16. 01:07PM
6 Version 3 of Internet RFC, yes. 01:04PM	6 Do you see the last entry there in the "Command 01:07PM
7 Q And cost is a parameter that's described in the 01:04PM	7 Expression" column is "ipv6 ospf dead-interval"? 01:07PM
8 OSPF specification; correct? 01:04PM	8 A Yes. 01:07PM
9 A I have to refer to that, if you have handy, if 01:04PM	9 Q Okay. And do you see that Cisco and you are 01:07PM
10 you can point me. 01:04PM	10 indicated as the author, slash, originator with respect 01:07PM
11 Q Sure. 01:04PM	11 to that command expression? 01:07PM
12 So if you go to the OSPF specification, which is 01:04PM	12 A Yes. 01:07PM
13 RFC 1131, which is Exhibit -- 01:04PM	13 Q Did you come up with the expression "ipv6 ospf 01:07PM
14 A 56. 01:04PM	14 dead-interval"? 01:07PM
15 Q -- 56 -- 01:04PM	15 A Yes, I did. 01:07PM
16 A Yeah. 01:05PM	16 Q And when you came up with the expression "ipv6 01:07PM
17 Q -- and look at the page that ends with the Bates 01:05PM	17 ospf dead-interval," did you model it on a pre-existing 01:08PM
18 No. 6007. 01:05PM	18 command with the name "ip ospf dead-interval"? 01:08PM
19 A 6007. Okay. 01:05PM	19 A Yes. That was the dominant decision-maker, yes. 01:08PM
20 Q I'm looking at the first full paragraph at the 01:05PM	20 Q Okay. And in the command "ipv6 ospf 01:08PM
21 top of that page. 01:05PM	21 dead-interval," "ipv6" refers to Internet Protocol 01:08PM
22 Do you see where it says, "A cost is associated 01:05PM	22 Version 6 as specified by the IETF; correct? 01:08PM
23 with the output side of each router interface. This 01:05PM	23 A Yes. It refers to Internet Protocol Version 6 as 01:08PM
24 cost is configurable by the system administrator." 01:05PM	24 specified in Internet RFC. 01:08PM
25 Do you see that? 01:05PM	25 Q And in the command "ipv6 ospf dead-interval," the 01:08PM
Page 111	Page 113

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<p>1 term "ospf" refers to the OSPF Version 3 standard 01:08PM</p> <p>2 specified by the IETF; correct? 01:09PM</p> <p>3 A Yes. In this context, "ipv6 ospf" refers to the 01:09PM</p> <p>4 OSPF Version 3 specification as specified in an Internet 01:09PM</p> <p>5 RFC. 01:09PM</p> <p>6 Q Okay. And a dead interval is a parameter that's 01:09PM</p> <p>7 described in the OSPF specification; right? 01:09PM</p> <p>8 A Not sure if you have -- do you have -- 01:09PM</p> <p>9 Q Yeah. It's, again, looking at the -- oh, that's 01:09PM</p> <p>10 the wrong one. The OSPF specification, which I should 01:09PM</p> <p>11 just keep in front of me -- okay, 56. 01:09PM</p> <p>12 A Yeah. Yeah. 01:09PM</p> <p>13 Q And please look at the page that ends in Bates 01:09PM</p> <p>14 No. 683. 01:09PM</p> <p>15 Do you see the section with the heading "A.4 The 01:10PM</p> <p>16 Hello packet"? 01:10PM</p> <p>17 A Yes. 01:10PM</p> <p>18 Q I'm reading at the beginning of the second 01:10PM</p> <p>19 paragraph. Do you see where it says: "All routers 01:10PM</p> <p>20 connected to a common network must agree on certain 01:10PM</p> <p>21 parameters (network mask, hello and dead intervals)." 01:10PM</p> <p>22 Do you see that? 01:10PM</p> <p>23 A Yes, I see that. 01:10PM</p> <p>24 Q Okay. So do you agree that a dead interval is a 01:10PM</p> <p>25 parameter that's described in the OSPF specification? 01:10PM</p> <p style="text-align: right;">Page 114</p>	<p>1 Version 2, or the IP OSPF, and, again, we have kept the 01:12PM</p> <p>2 same flow and same -- same syntax 01:12PM</p> <p>3 MR SILBERT: Right 01:12PM</p> <p>4 Q And so just, if I understand your testimony 01:12PM</p> <p>5 correctly, you are saying that where the specification 01:12PM</p> <p>6 uses the term "dead," space "interval," the command uses 01:12PM</p> <p>7 the term "dead," hyphen, "interval"? 01:12PM</p> <p>8 MR NEUKOM: Objection; misstates the document -- 01:12PM</p> <p>9 or, pardon me, prior testimony and mischaracterizes the 01:12PM</p> <p>10 document 01:12PM</p> <p>11 THE WITNESS: Yeah, so the Internet specification 01:12PM</p> <p>12 uses multiple ways It does use a variant, which is 01:12PM</p> <p>13 dead, space, interval It also uses DeadInt 01:12PM</p> <p>14 The Cisco implementation of IPv6 OSPF uses dead, 01:12PM</p> <p>15 hyphen, interval 01:12PM</p> <p>16 BY MR SILBERT: 01:12PM</p> <p>17 Q Okay Just -- just so we can save a little time, 01:12PM</p> <p>18 do you -- and when we get to the next term, do you agree 01:13PM</p> <p>19 that the OSPF specification describes something 01:13PM</p> <p>20 called -- a parameter called a Hello interval? 01:13PM</p> <p>21 A So on the same page, your 683, if you look at the 01:13PM</p> <p>22 packet, there is something called HelloInt, which is 01:13PM</p> <p>23 Hello interval 01:13PM</p> <p>24 Q Right 01:13PM</p> <p>25 And also in the sentence above that I read 01:13PM</p> <p style="text-align: right;">Page 116</p>
<p>1 MR NEUKOM: Objection; document speaks for 01:10PM</p> <p>2 itself 01:10PM</p> <p>3 THE WITNESS: So if you -- if you look at the 01:10PM</p> <p>4 packet from that picture, there is one which is called 01:10PM</p> <p>5 "DeadInt," and that's the packet format, and the 01:10PM</p> <p>6 document does refer to as "DeadInt," or dead interval. 01:11PM</p> <p>7 in multiple places 01:11PM</p> <p>8 MR SILBERT: Right 01:11PM</p> <p>9 Q Okay So in the command "ipv6 ospf 01:11PM</p> <p>10 dead-interval," you are referring to the dead interval 01:11PM</p> <p>11 parameter using the same term that's used in the OSPF 01:11PM</p> <p>12 specification; right? 01:11PM</p> <p>13 MR NEUKOM: Objection; mischaracterizes the 01:11PM</p> <p>14 document 01:11PM</p> <p>15 THE WITNESS: So dead, dash, interval, at least 01:11PM</p> <p>16 from the quick scan, I'm not seeing that in the 01:11PM</p> <p>17 document The document does use "DeadInt," or dead, 01:11PM</p> <p>18 space, interval, some of the other variants 01:11PM</p> <p>19 BY MR SILBERT: 01:11PM</p> <p>20 Q Okay So the variation in the command that you 01:11PM</p> <p>21 have identified is that you added a hyphen; right? 01:11PM</p> <p>22 MR NEUKOM: Objection; misstates the document 01:11PM</p> <p>23 and misstates his prior testimony 01:11PM</p> <p>24 THE WITNESS: Dead, hyphen, interval is how we 01:12PM</p> <p>25 had implemented a similar command in -- in OSPF 01:12PM</p> <p style="text-align: right;">Page 115</p>	<p>1 previously, it says. "All routers connected to a common 01:13PM</p> <p>2 network must agree on certain parameters (network mask, 01:13PM</p> <p>3 hello and dead intervals); right? 01:13PM</p> <p>4 A Yes, that's another reference to it 01:13PM</p> <p>5 Q Okay Who else was on the team with you when you 01:13PM</p> <p>6 came up with the expression "ipv6 ospf dead-interval"? 01:14PM</p> <p>7 A It's the same set of people, but I don't remember 01:14PM</p> <p>8 a specific name at this point Pretty much all of this 01:14PM</p> <p>9 IPv6 OSPF command we did together at the same time 01:14PM</p> <p>10 Q Okay So is that -- 01:14PM</p> <p>11 A Same answer as before 01:14PM</p> <p>12 Q Let me just ask you, and if it's not fair, just 01:14PM</p> <p>13 say so, but is that answer going to be true for every 01:14PM</p> <p>14 one of these IPv6 OSPF commands? 01:14PM</p> <p>15 A That is correct 01:14PM</p> <p>16 Q Okay 01:14PM</p> <p>17 A It's all done together, one time 01:14PM</p> <p>18 Q Okay Okay Let's just move to the next 01:14PM</p> <p>19 command, which is "ipv6 ospf hello-interval " We are 01:14PM</p> <p>20 now on the next page of Exhibit 54, page 17 01:14PM</p> <p>21 Do you see that? 01:14PM</p> <p>22 A Yes 01:14PM</p> <p>23 Q And Cisco and you, again, are indicated as the 01:14PM</p> <p>24 author, slash, originator with respect to that command 01:14PM</p> <p>25 Do you see that? 01:14PM</p> <p style="text-align: right;">Page 117</p>

1 A Yes. 01:14PM	1 Q Okay So other than the hyphen, there's -- 01:17PM
2 MR. NEUKOM: Objection; mischaracterizes the 01:14PM	2 again, there's a difference here because 01:17PM
3 document. 01:14PM	3 "hello-interval," in the command expression, is 01:17PM
4 MR. SILBERT: Man. Okay. 01:15PM	4 hyphenated, and the term "Hello interval" in the -- in 01:17PM
5 Q And did you come up with the expression "ipv6 01:15PM	5 the specification has a space instead of a hyphen; is 01:17PM
6 ospf hello-interval"? 01:15PM	6 that -- is that it? 01:17PM
7 A Yes. I think we are repeating it for all 01:15PM	7 MR. NEUKOM: Objection; mischaracterizes the 01:17PM
8 commands. It's one document. It was all done together, 01:15PM	8 document 01:17PM
9 but that's it. 01:15PM	9 THE WITNESS: This command implements the 01:17PM
10 Q Okay. Fair -- fair enough. 01:15PM	10 functionality as specified by either HelloInt or Hello, 01:17PM
11 When you -- 01:15PM	11 space, interval 01:17PM
12 MR. NEUKOM: To be clear -- sorry -- this is a 01:15PM	12 BY MR. SILBERT: 01:17PM
13 comment generally intended to be helpful. I think when 01:15PM	13 Q Okay All right Let's just keep going 01:17PM
14 the witness is saying it's all one document, he's not 01:15PM	14 "Ipv6 ospf network," which is the next command on 01:17PM
15 referring to Exhibit 54. He's, rather, talking to the 01:15PM	15 page 17 of Exhibit 54, again, you came up with that 01:18PM
16 Bates-stamp number, which is included in the 01:15PM	16 command expression; is that correct? 01:18PM
17 earliest-known document. 01:15PM	17 A Yes, I did 01:18PM
18 MR. SILBERT: Yeah, yeah, I understand what he's 01:15PM	18 Q And when you came up with the command expression 01:18PM
19 referring to. 01:15PM	19 "ipv6 ospf network," did you model it on a pre-existing 01:18PM
20 MR. NEUKOM: Okay. 01:15PM	20 command with a name "ip ospf network"? 01:18PM
21 BY MR. SILBERT: 01:15PM	21 A Yes That is the dominant reason to make this 01:18PM
22 Q When you came up with the expression "ipv6 ospf 01:15PM	22 choice 01:18PM
23 hello-interval," did you model it on a pre-existing 01:15PM	23 Q Okay And what's the function of this command, 01:18PM
24 command with a name "ip ospf hello interval"? 01:15PM	24 incidentally, "ipv6 ospf network"? 01:18PM
25 A Yeah, it's the same answer. That was our 01:15PM	25 A So this is a interface scope command Interfaces 01:18PM
Page 118	Page 120
1 dominant reason to choose this set of keywords. 01:16PM	1 are of different type. There are interfaces which are 01:19PM
2 Q And in the command "ipv6 ospf hello-interval," 01:16PM	2 used to connect two devices together, which are known as 01:19PM
3 does "ipv6" refer to Internet Protocol Version 6 as 01:16PM	3 point-to-point interfaces, or there are interfaces which 01:19PM
4 specified by the IETF? 01:16PM	4 are used to connect one to many. Those are broadcast 01:19PM
5 A Yes, and "ipv6" refers to Internet Protocol 01:16PM	5 interfaces, and there are others. I'll not get into the 01:19PM
6 Version 6 RFC -- 01:16PM	6 comprehensive list. 01:19PM
7 Q Okay -- sorry, I didn't mean to interrupt you. 01:16PM	7 This command will let you choose what type of 01:19PM
8 A That's okay. 01:16PM	8 network you are connecting to. Are you connecting to, 01:19PM
9 Q And in the command "ipv6 ospf hello-interval," 01:16PM	9 again, a point-to-point-type circuit or a broadcast-type 01:19PM
10 does the term "ospf" refer to OSPF Version 3 as 01:16PM	10 circuit or other possible types of circuit? 01:19PM
11 specified by the IETF? 01:16PM	11 Q Okay. And choosing what type of network you are 01:19PM
12 A Yes. In the context of IPv6 OSPF, it refers to 01:16PM	12 connecting to is something that's described in the OSPF 01:19PM
13 OSPF Version 3, which is an RFC. 01:16PM	13 standard; is that correct? 01:19PM
14 Q Okay. And in the command "ipv6 ospf 01:16PM	14 A OSPF standard describes procedure for different 01:19PM
15 hello-interval," does "hello-interval" refer to a 01:16PM	15 type of interconnections. So, for example, there -- 1 01:20PM
16 parameter that the OSPF specification describes as a 01:16PM	16 can look deeper into it, but there might be sections 01:20PM
17 Hello interval? 01:17PM	17 which will describe if you are connecting in a 01:20PM
18 MR. NEUKOM: Objection; mischaracterizes the 01:17PM	18 point-to-point sense, these are the procedures you 01:20PM
19 document. 01:17PM	19 should be implementing, or if you are -- if you are 01:20PM
20 THE WITNESS: So Hello, hyphen, interval, you can 01:17PM	20 connecting to a one-too-many-type circuit, these are the 01:20PM
21 map it to what the -- the RFC is saying in terms of 01:17PM	21 procedures you should be implementing, so the RFC 01:20PM
22 HelloInt or Hello, space, interval. 01:17PM	22 describes the procedures, and we will have -- Cisco has 01:20PM
23 BY MR. SILBERT: 01:17PM	23 CLI, which will implement that procedure in the back 01:20PM
24 Q Okay. So -- 01:17PM	24 end. 01:20PM
25 A They are implying the same thing. 01:17PM	25 Q Okay. Could you -- do you have the OSPF 01:20PM
Page 119	Page 121

<p>1 A So -- 04:46PM</p> <p>2 Q Thank you 04:46PM</p> <p>3 A -- so the enclosure title "Description" was 04:46PM</p> <p>4 written by Friedman, and this describes what he has 04:46PM</p> <p>5 suggested, so I'm basing on this document 04:47PM</p> <p>6 Q Okay Other than what you read in that document, 04:47PM</p> <p>7 do you know anything else about the origination of the 04:47PM</p> <p>8 command expression "ip ospf authentication"? 04:47PM</p> <p>9 A No 04:47PM</p> <p>10 MR SILBERT: Okay Then thank you At this 04:47PM</p> <p>11 point, again, subject to any redirect based on 04:47PM</p> <p>12 questioning by your counsel, I thank you very much for 04:47PM</p> <p>13 your time and attention, and I'm concluding the 04:47PM</p> <p>14 deposition 04:47PM</p> <p>15 THE WITNESS: Sure Thanks 04:47PM</p> <p>16 MR NEUKOM: No direct 04:47PM</p> <p>17 THE VIDEOGRAPHER: Okay 04:47PM</p> <p>18 MR NEUKOM: At this time 04:47PM</p> <p>19 THE VIDEOGRAPHER: This concludes today's 04:47PM</p> <p>20 deposition of Abhay Roy The number of media used was 04:47PM</p> <p>21 three and will be retained by Veritext Legal Solutions 04:47PM</p> <p>22 The time is 4:47 p m We are off the record 04:47PM</p> <p>23 (TIME NOTED: 4:47 P M)</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 230</p>	<p>1</p> <p>2</p> <p>3 I, the undersigned, a Certified Shorthand</p> <p>4 Reporter of the State of California, do hereby certify:</p> <p>5 That the foregoing proceedings were taken before</p> <p>6 me at the time and place herein set forth; that any</p> <p>7 witnesses in the foregoing proceedings, prior to</p> <p>8 testifying, were placed under oath; that a verbatim</p> <p>9 record of the proceedings was made by me using machine</p> <p>10 shorthand which was thereafter transcribed under my</p> <p>11 direction; further, that the foregoing is an accurate</p> <p>12 transcription thereof.</p> <p>13 I further certify that I am neither financially</p> <p>14 interested in the action nor a relative or employee of</p> <p>15 any attorney or any of the parties.</p> <p>16 IN WITNESS WHEREOF, I have this date subscribed</p> <p>17 my name.</p> <p>18</p> <p>19 Dated: December 30, 2015</p> <p>20</p> <p>21</p> <p>22</p> <p>23 <%signature%></p> <p>24 RACHEL FERRIER</p> <p>25 CSR No. 6948</p> <p style="text-align: right;">Page 232</p>
<p>1 I, ABHAY ROY, do hereby declare under penalty</p> <p>2 of perjury that I have read the foregoing transcript;</p> <p>3 that I have made any corrections as appear noted, in</p> <p>4 ink, initialed by me, or attached hereto; that my</p> <p>5 testimony as contained herein, as corrected, is true and</p> <p>6 correct.</p> <p>7 EXECUTED this _____ day of _____,</p> <p>8 2015, at _____,</p> <p>9 (City) (State)</p> <p>10</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16 _____</p> <p>17 ABHAY ROY</p> <p>18 VOLUME 1</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 231</p>	

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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

- - - - - x Case No.
: 5:14-cv-05344-BLF (PSG)
:
CISCO SYSTEMS, INC., :
:
Plaintiff, :
:
vs. :
:
ARISTA NETWORKS, INC., :
:
Defendant. :
:
- - - - - x

VIDEOTAPED DEPOSITION OF GREG SATZ
March 23, 2016
HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY
VOLUME 1

Reported by
Brooke R. Bohr
CSR No. 753
Job No 2272380
Pages 1 - 168

<p>1 VIDEOTAPED DEPOSITION OF GREG SATZ, 2 taken at the instance of the Defendant, at the 3 offices of TUCKER & ASSOCIATES, 605 W. Fort 4 Street, in the City of Boise, State of Idaho, 5 commencing at 10:10 a.m., on March 23, 2016, 6 before Brooke R. Bohr, CSR, RPR, a Notary Public 7 in and for the State of Idaho, pursuant to notice, 8 and in accordance with the applicable Rules of 9 Civil Procedure.</p> <p>10 11 A P P E A R A N C E S 12 FOR PLAINTIFF 13 John M. Neukom, Esq. 14 QUINN EMAMUEL URQUHART & SULLIVAN LLP 15 50 California Street, 22nd Floor 16 San Francisco, CA 94111 17 (415) 875-6320 18 johnneukom@quinnemmanuel.com 19 FOR DEFENDANT 20 Brian L. Ferrall, Esq. 21 KEKER & VAN NEST LLP 22 633 Battery Street 23 San Francisco, CA 94111 24 (415) 391-5400 25 bferrall@kvn.com</p> <p style="text-align: right;">Page 2</p>	<p>1 BOISE, IDAHO 2 March 23, 2016, 10:10 a.m.</p> <p>3 4 THE VIDEOGRAPHER: We are now on the record. 5 Please note that the microphones are 6 sensitive and may pick up whispering and private 7 conversations. Please turn off all cell phones or 8 place them away from the microphones as they can 9 interfere with the deposition audio. Recording 10 will continue until all parties agree to go off 11 record. 12 My name is David Cromwell, representing 13 Veritext. The date today is March 23, 2016, and 14 the time is approximately 10:10 a.m. This 15 deposition is being held at Tucker & Associates 16 located at 605 West Fort Street, Boise, Idaho 17 83702, and is being taken by counsel for the 18 defendant. 19 The caption of this case is Cisco 20 Systems, Inc. v. Arista Networks, Inc. This case 21 is filed in the United States District Court, 22 Northern District of California, San Jose 23 Division, Case No. 5:14-CV-05344-BLF PSG. The 24 name of the witness is Greg Satz. 25 At this time, the attorneys present in</p> <p style="text-align: right;">Page 4</p>
<p>1 W I T N E S S 2 GREG SATZ Page: 3 Examination by Mr. Ferrall 5 4 Examination by Mr. Neukom 151 5 Further Examination by Mr. Ferrall 158 6 7 * * * * * 8 9 E X H I B I T S 10 11 Page: 12 Exhibit 400 Greg Satz LinkedIn 13 13 Exhibit 401 "TOPS-20 DECnet-20 Programmers 22 14 Guide and Operations Manual" 15 16 Exhibit 402 One-page Document with 36 17 Bates No. KL-883 18 Exhibit 403 Document Beginning Bates No. 69 19 ARISTANDCA00022465 20 21 Exhibit 404 Document Beginning Bates No. 84 22 CSI-CLI-00359132 23 Exhibit 405 One-page Document Bates No. 106 24 CSI-CLI-00746924 25 26 Exhibit 406 Document Bates No. CSI-CLI-01828732 112 27 Through Bates No. CSI-CLI-01828783 28 Exhibit 407 Document Beginning Bates No. 141 29 CSI-CLI-01295215 30 31 Exhibit 408 Document Beginning Bates No. 143 32 CSI-CLI-01295181 33 34 * * * * * 35</p> <p style="text-align: right;">Page 3</p>	<p>1 the room will identify themselves and the parties 2 they represent. 3 MR. FERRALL: Brian Ferrall of Keker & 4 Van Nest on behalf of Arista Networks. 5 MR. NEUKOM: John Neukom for the plaintiff. 6 THE COURT: Our court reporter, Brooke Bohr, 7 representing Veritext, will swear in the witness, 8 and we can proceed. 9 10 GREG SATZ, 11 produced as a witness at the instance of the 12 Defendant, having been first duly sworn, was 13 examined and testified as follows: 14 15 EXAMINATION 16 BY MR. FERRALL: 17 Q. Good morning, Mr. Satz. Can you please 18 state your full name. 19 A. Greg Leonard Satz. 20 Q. Mr. Satz, you are not represented by 21 counsel today; is that right? 22 A. Correct. 23 Q. Have you ever been deposed before? 24 A. I have. 25 Q. All right. So you know the basic</p> <p style="text-align: right;">Page 5</p>

<p>1 did, while it had the same capability, was more 2 robust, had a higher performance capability. 3 Because as the networks evolved, you needed to be 4 able to push data faster. And Stanford's code was 5 basic. It was there to just move the data, not 6 move it with the requirements that the next few 7 years dictated. And a lot of what Kirk did was to 8 create high-speed interfaces, and that's what 9 Wellfleet showed up to compete on was could they 10 go faster than Cisco. And it created an arms 11 race, as it were. Who could go faster. 12 Q. Now, you mentioned IETF, and I think 13 earlier today you mentioned RFCs. Can you tell me 14 what an RFC is? 15 A. Request for comments. 16 Q. And what's the purpose of a request for 17 comment? 18 A. To create a protocol definition or 19 solution and to publish it as a request for 20 comments in an effort to move it forward as a 21 proposed solution and a trial solution and then a 22 committed solution, as the solution progressed 23 through a community and an implementation and a 24 trial and then some feedback. So it was an 25 engineering group. Their goal was to deliver</p> <p style="text-align: right;">Page 66</p>	<p>1 evolved. And I can't speak to that as much. 2 Q. BY MR. FERRALL: Okay. But -- 3 A. But managing that was important. 4 Q. And just by way of example, you 5 mentioned IGRP. 6 A. Um-hum. 7 Q. And that was a technology that Cisco 8 chose to keep proprietary, right? 9 A. Yes. 10 Q. All right. And there were other 11 technologies that Cisco was involved in 12 developing, like BGP, for example? 13 A. Right. 14 Q. And that Cisco chose to publish RFCs 15 about, right? 16 A. Well, Cisco didn't publish the RFCs. 17 Cisco -- a person like Kirk might be a part of the 18 team that developed BGP and then Kirk would have 19 his name on it with a Cisco title, but it wasn't 20 Cisco, it was actually Kirk. And the RFC itself 21 is an open document. So just to make that 22 distinction. 23 If there was a protocol that showed up 24 from the IETF, Cisco was typically involved. 25 Q. And what was your involvement in</p> <p style="text-align: right;">Page 68</p>
<p>1 something working. Companies would try to use it 2 as -- to competitive advantages. But the 3 standards body existed to create a level playing 4 field. 5 Q. And did you have a view at the time as 6 to the importance of publishing technology through 7 RFCs? Well, let me strike that. That was a 8 garbled question. 9 In your experience at Cisco in the 10 early years, was the sharing of technology through 11 RFCs important to Cisco? 12 MR. NEUKOM: Objection; vague, compound, and 13 lack of foundation. 14 THE WITNESS: Back then it wasn't clear how 15 successful Cisco would be and/or whether we might 16 maintain or keep a competitive advantage. So 17 there really was a series of tradeoffs in the 18 decision to create an RFC and make it a community 19 effort or to create a proprietary solution and 20 then decide whether to make it an RFC later. Most 21 of the times, it was to make the customers happy. 22 If the customers wanted something documented, we 23 would typically figure out how to comply with 24 that. Later, as the company got larger and I 25 wasn't involved, managing the IETF and RFC process</p> <p style="text-align: right;">Page 67</p>	<p>1 IETF -- in IETF? Did you -- 2 A. I would go to the meetings and attend 3 various functions and decide, based on the 4 software responsibility I had, to participate in 5 different standards or not. 6 MR. FERRALL: Let's mark this as the next 7 exhibit. 8 (Exhibit 403 marked.) 9 THE WITNESS: More ancient history. 10 Q. BY MR. FERRALL: Yeah. So I've marked 11 as Exhibit 403 what I think is an IETF RFC for a 12 simple network management protocol, SNMP. Do you 13 recognize this, Mr. Satz? 14 A. I do. 15 Q. Did you have involvement in the SNMP 16 RFC? 17 A. I did. 18 Q. What was that involvement? 19 A. I was just part of the working group 20 that went through the process of deciding what 21 would be done as a solution to network management. 22 And SNMP was the output. 23 Q. Do you remember when this SNMP working 24 group began to discuss this solution? 25 A. Probably a couple years before this</p> <p style="text-align: right;">Page 69</p>

<p>1 document, at least a year.</p> <p>2 Q. And do you remember any particular</p> <p>3 parts that you contributed, specifically?</p> <p>4 A. I think I did an RFC for a MIB for</p> <p>5 CLNS, another protocol stack that since</p> <p>6 disappeared.</p> <p>7 Q. Was there a -- have you ever heard of</p> <p>8 the term "SNMP server"?</p> <p>9 A. Oh, the command line, parsed for the --</p> <p>10 yeah -- configuration? Um-hum. Yes, I created</p> <p>11 that.</p> <p>12 Q. What's -- is there such a thing as an</p> <p>13 SNMP server, or what does that term mean?</p> <p>14 A. Wow.</p> <p>15 MR. NEUKOM: Objection; lack of foundation,</p> <p>16 calls for opinion testimony.</p> <p>17 THE WITNESS: I think all of that code is</p> <p>18 gone now. The SNMP server was the way to tell the</p> <p>19 router software that it was to be an SNMP -- it</p> <p>20 was to start the SNMP protocol. So it would then</p> <p>21 begin to listen to and process SNMP packets. And</p> <p>22 it was probably one of the first commands</p> <p>23 implemented as part of this RFC to implement it</p> <p>24 and create an SNMP protocol within the Cisco</p> <p>25 software.</p> <p style="text-align: right;">Page 70</p>	<p>1 called an SNMP community.</p> <p>2 Do you see that?</p> <p>3 A. Yes.</p> <p>4 Q. Is that consistent with your definition</p> <p>5 of SNMP community that you just described?</p> <p>6 A. Yeah. It's more mind-numbing when you</p> <p>7 see it in words.</p> <p>8 Q. I couldn't agree more.</p> <p>9 A. Yeah. It turns out a lot of these</p> <p>10 things are written to be really obtuse. They are</p> <p>11 not intended to be obtuse, but they have a</p> <p>12 structure to them that when you turn it into</p> <p>13 English or a simple picture it takes a lot of this</p> <p>14 out. They tried to make a more generic</p> <p>15 mathematical underpinning to a mapping that added</p> <p>16 a level of complexity that just ultimately wasn't</p> <p>17 necessary. But they were trying to be very</p> <p>18 flexible.</p> <p>19 Q. Okay. But this notion of community as</p> <p>20 described in the Exhibit 403 is the same as the</p> <p>21 community that you understood when you --</p> <p>22 A. I made the implementation simpler</p> <p>23 because of adding a whole layer. The idea, if I</p> <p>24 can remember any of this craziness, is that you</p> <p>25 would have a table of -- no different than a</p> <p style="text-align: right;">Page 72</p>
<p>1 MR. NEUKOM: And, Brian, I rescind my prior</p> <p>2 objection. Pardon me.</p> <p>3 THE WITNESS: Hey, just because I write it,</p> <p>4 doesn't mean I'm the expert.</p> <p>5 MR. FERRALL: You can't -- you can't</p> <p>6 rescind. No rescinding objections, Mr. Neukom.</p> <p>7 Q. BY MR. FERRALL: What's -- what's the</p> <p>8 notion of community in the context of SNMP?</p> <p>9 A. After a while, you start running out of</p> <p>10 words, so you pick one that tries to create a</p> <p>11 sense of purpose. And so "community" was an</p> <p>12 attempt to describe a collection of users who</p> <p>13 would have a specific purpose with respect to</p> <p>14 using the protocol. It was nothing more than an</p> <p>15 authorization or an access. A password, as it</p> <p>16 were.</p> <p>17 Q. So if you look at Page 7 of this</p> <p>18 Exhibit 403.</p> <p>19 MR. NEUKOM: Sorry. Which page are we on?</p> <p>20 MR. FERRALL: Page 7.</p> <p>21 Q. BY MR. FERRALL: If you see under</p> <p>22 Section 3.2.5, Definition of Administrative</p> <p>23 Relationships, and then the second paragraph there</p> <p>24 says, quote, appearing of an SNMP agent with some</p> <p>25 arbitrary set of SNMP application entities is</p> <p style="text-align: right;">Page 71</p>	<p>1 database in today's language -- and you could be</p> <p>2 able pull out individual things. And so they</p> <p>3 wanted to be able to map authorizations to</p> <p>4 individual entries in the database. And the</p> <p>5 implementation I did was to make it an all or</p> <p>6 nothing. Because if somebody wanted that level of</p> <p>7 specificity they'd ask for it and then we'd go</p> <p>8 back and put all that crazy complexity into the</p> <p>9 code. But just because the standard made it that</p> <p>10 flexible we weren't going to go that far. It was</p> <p>11 an engineering choice and cost benefit.</p> <p>12 Yeah, I don't know if you've ever heard</p> <p>13 of Vint Cerf?</p> <p>14 Q. Sure.</p> <p>15 A. So one of the more inspiring aspects of</p> <p>16 this work, we had three different protocols</p> <p>17 compete to be the network management RFC, and so</p> <p>18 there was just three groups of engineers that were</p> <p>19 not happy, or wanted their choice. And I watched</p> <p>20 Vint come in and broker a -- mediate, and I had</p> <p>21 never seen that kind of mediation happen before,</p> <p>22 let alone difficult engineers. And so it was a</p> <p>23 very inspiring time to watch somebody. And then</p> <p>24 so, you know, Vint was the author of a lot of the</p> <p>25 TCP/IP protocols. So people respected him and</p> <p style="text-align: right;">Page 73</p>

<p>1 Exhibit 405 is a one-page document</p> <p>2 marked CSI-CLI-00746924.</p> <p>3 Exhibit 406 begins CSI-CLI-01828732,</p> <p>4 and for this document I'll read the last number</p> <p>5 because I think we're all unclear whether it is</p> <p>6 one versus multiple documents. This ends with</p> <p>7 Bates stamp CSI-CLI-01828783.</p> <p>8 Exhibit 407 begins Bates stamp</p> <p>9 CSI-CLI-01295215.</p> <p>10 And Exhibit 408 begins</p> <p>11 CSI-CLI-01295181.</p> <p>12 MR. NEUKOM: Thanks all.</p> <p>13 MR. FERRALL: Agreed. Thank you.</p> <p>14 (The deposition concluded at 3:31 p.m.)</p> <p>15 -oo0oo-</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 166</p>	<p>1 REPORTER'S CERTIFICATE</p> <p>2</p> <p>3</p> <p>4 I, BROOKE R. BOHR, a Notary Public in</p> <p>5 and for the State of Idaho, do hereby certify:</p> <p>6 That prior to being examined, the</p> <p>7 witness named in the foregoing deposition was by</p> <p>8 me duly sworn to testify the truth, the whole</p> <p>9 truth, and nothing but the truth;</p> <p>10 That said deposition was taken down by</p> <p>11 me in shorthand at the time and place therein</p> <p>12 named and thereafter reduced into typewriting</p> <p>13 under my direction, and that the foregoing</p> <p>14 transcript contains a full, true, and verbatim</p> <p>15 record of the said deposition.</p> <p>16 I further certify that I have no</p> <p>17 interest in the event of the action.</p> <p>18 WITNESS my hand and seal March 30, 2016.</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23 <%signature%></p> <p>24 Brooke R. Bohr</p> <p>25 CSR No. 753</p> <p style="text-align: right;">Page 168</p>
<p>1 VERIFICATION</p> <p>2 I declare under penalty of perjury</p> <p>3 under the laws that the foregoing is</p> <p>4 true and correct.</p> <p>5</p> <p>6 Executed on _____, 20____,</p> <p>7 at _____.</p> <p>8</p> <p>9</p> <p>10</p> <p>11</p> <p>12 _____</p> <p>13 WITNESS SIGNATURE</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p> <p style="text-align: right;">Page 167</p>	